



BRITISH MARINE POLYZOA.

VOL. II.

A
HISTORY
OF THE
BRITISH MARINE POLYZOA.

BY
THOMAS HINCKS, B.A., F.R.S.,
AUTHOR OF 'A HISTORY OF THE BRITISH HYDROID ZOOPHYTES,' ETC.

"... natura ipsa docente, et juvenilitate sua alliciente."
OTHO FABRICIUS.

IN TWO VOLUMES.

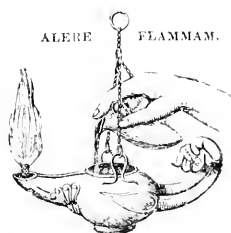
VOL. II.—PLATES.

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MDCCCLXXX.

“ THE spirit of God works everywhere alike, where there is no eye to see, covering all lonely places with an equal glory, using the same pencil and outpouring the same splendour in the caves of the waters where the sea-snakes swim and in the desert where the satyrs dance, amidst the fir-trees of the stork and the rocks of the conies, as among those higher creatures whom he has made capable witnesses of his working.”

RUSKIN.



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PLATE I.

FIG.

1. *HIPPOTHOA EXPANSA*, page 291.
2. *HIPPOTHOA DIVARICATA*, var. *a* (*CONFERTA*), p. 288.
See Plate XLIV.
3. *EUCRATEA CHELATA*, p. 14 ; repent form.
See Plates II. & III.
- 4, 5. *AETEA ANGUINA*, p. 4.
- 6, 7. *AETEA RECTA*, p. 6.
- 8-10. *AETEA TRUNCATA*, p. 8. See Plate II.
11. ———, dwarf variety.
12. ———, a portion of the creeping base.



THE NEW YORK BOTANICAL GARDEN

Illustrations of the plant of the MUSEUM OF NATURAL HISTORY

PLATE II.

FIG.

1. *HUXLEYA FRAGILIS*, p. 27. After Busk.
2. *BRETTIA TUBÆFORMIS*, p. 28. See Plate V.
3. *ÆTEA TRUNCATA*, p. 8; erect and pedicellate form.
4. *EUCRATEA CHELATA*, p. 14; showing the creeping line of cells, from which the shoots spring.
- 5-7. ———, showing the primary cell and the first stages of the colony.
8. ———, primary zoœcia.

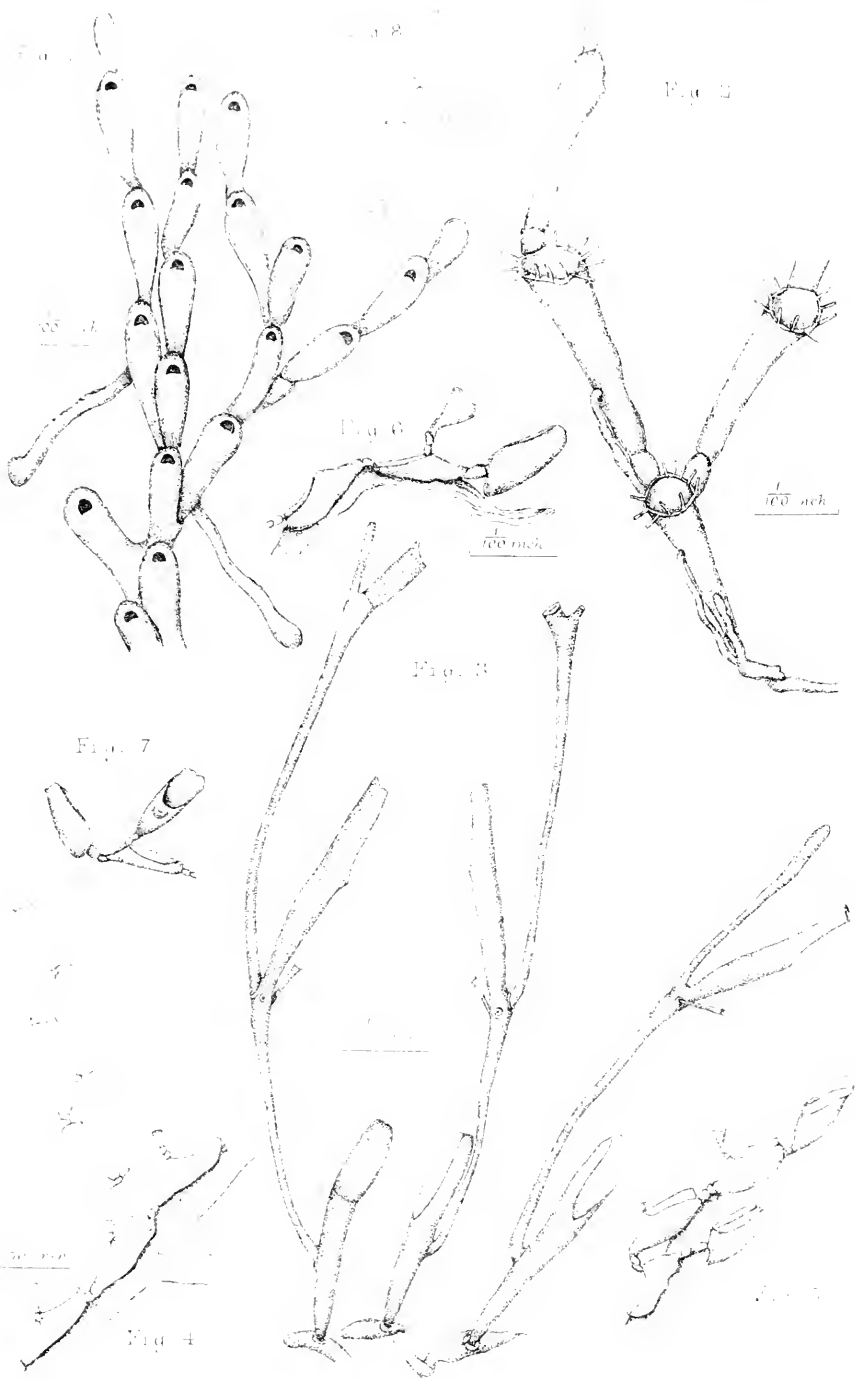


PLATE III.

FIG.

- 1-3. GEMELLARIA LORICATA, p. 18: figure 3 is taken from a specimen of *G. Willisii* received from Dr. Dawson.
4. ———, natural size.
- 5-8. SCRUPARIA CLAVATA, p. 24; the uniserial and biserial forms. Fig. 7 shows the mode of branching.
- 9, 10. EUCRATEA CHELATA, p. 14.
11. ———, creeping base, with oval expansions, from which the shoots originate.



PLATE IV.

FIG.

1. *NOTAMIA BURSARIA*, p. 100.
2. ———, front of the zoarium.
3. ———, dorsal surface.
4. ———, nat. size.
5. ———, avicularia, showing the differences of size.
- 5*a*. ———, avicularium, showing the arrangement of the muscles for opening and closing the mandible. After Busk.
- 6, 7. *BRETTIA PELLUCIDA*, p. 28. After Busk.
- 8, 9. *BEANIA MIRABILIS*, p. 96.
10. ———, a young cell.

Fig. 3.

Fig. 1.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 7.

Fig. 8.

Fig. 10.

Fig. 9.

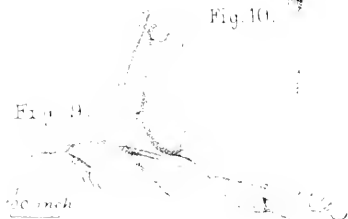


PLATE V.

FIG.

1. *BRETTIA TUBIFORMIS*, p. 28. After a sketch by Mr. R. S. Boswell.
- 2-5. *CELLULARIA PEACHII*, p. 34.
6. *FLUSTRA BARLEEI*, p. 122, nat. size. From a drawing by Mr. Alder.
7. ———, zoëcia, with avicularia.
8. ———, zoëcia, showing the immersed oocia.



Fig. 4

Fig. 5

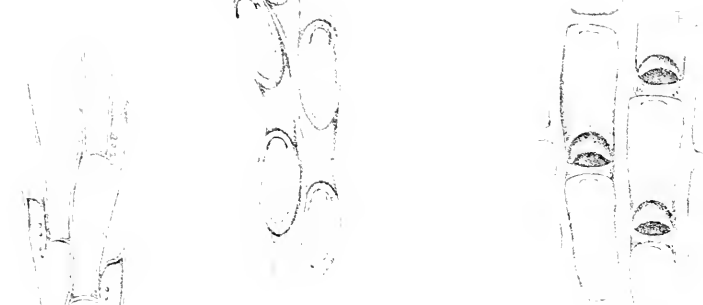


Fig. 6

Fig. 7

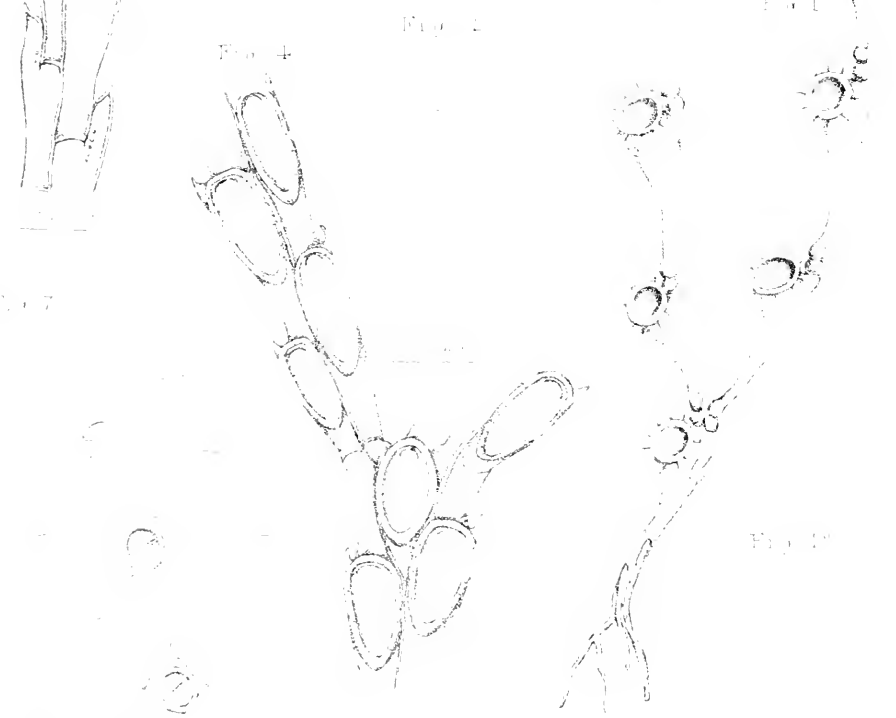


PLATE VI.

FIG

1. *MENIPEA TERNATA*, p. 38.
2. ———, nat. size.
3. ———, dorsal surface.
4. ———, oöcia.
- 5, 6. *SCRUPOCELLARIA ELLIPTICA*, p. 46.
- 7-9. *SCRUPOCELLARIA SCABRA*, p. 48.
10. ———, nat. size.
11. ———, primary cell. After Smitt.

Fig. 1



500 micra

Fig. 2



Fig. 3



500 micra



500 micra



500 micra

500 micra

PLATE VII.

FIG.

1, 2. *SCRUPOCELLARIA REPTANS*, p. 52.

3. ——— ———, nat. size.

4. ——— ———, with oœcium.

5. ——— ———, radical fibre with adhesive disk.

6. ——— ———, ditto modified so as to form a grapnel.

7. ——— ———, front avicularium.

8, 9. *SCRUPOCELLARIA SCRUPOSA*, p. 45.

10. ——— ———, vibraculum.

11, 12. *SCRUPOCELLARIA SCRUPEA*, p. 50.

13. ——— ———, nat. size.

14. ——— ———, vibracular cell.

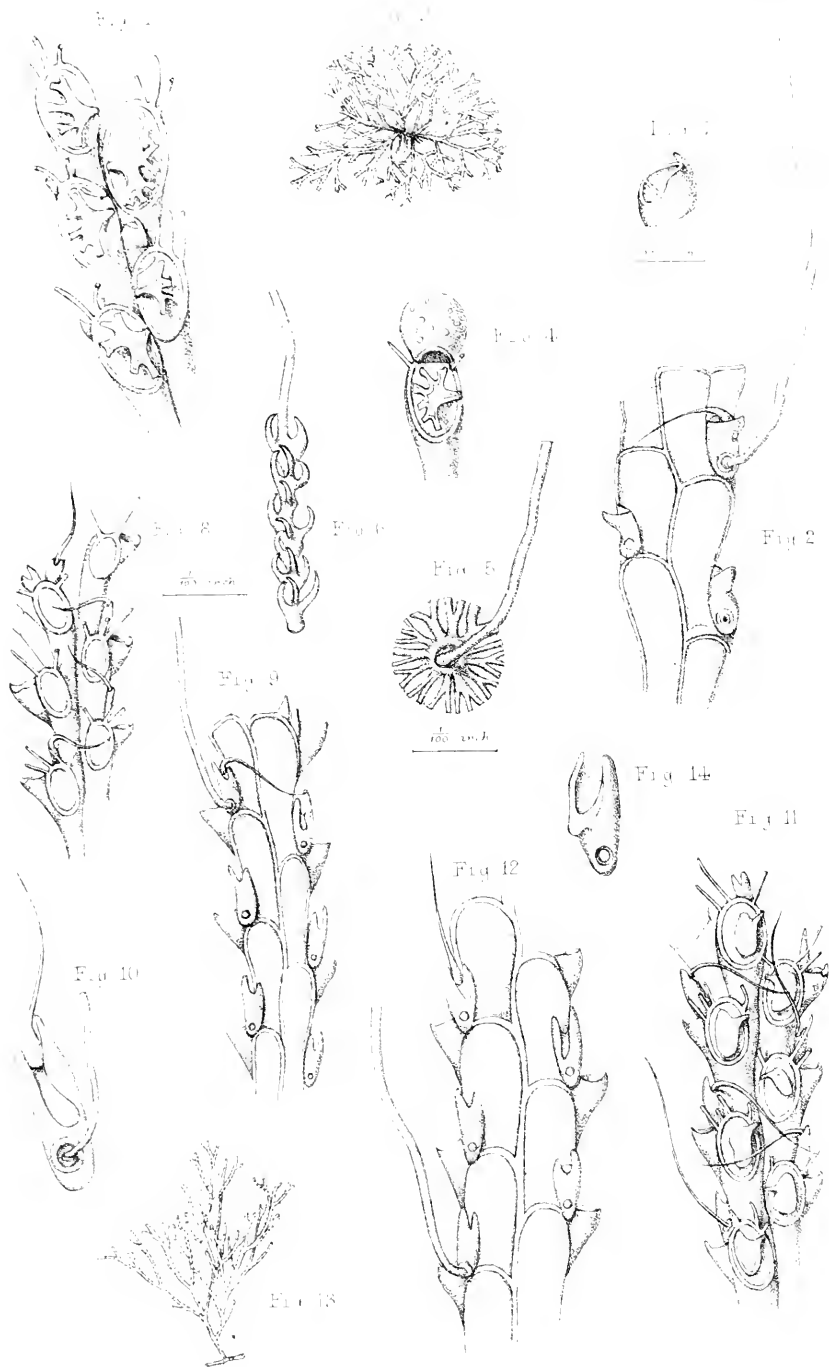


PLATE VIII.

FIG.

1, 2. *BICELLARIA CILIATA*, p. 68.

3. ——— ———, nat. size.

4. ——— ———, oöcium.

5. ——— ———, avicularium.

6-8. *CABEREA ELLISII*, p. 59.

9-11. *CABEREA BORYI*, p. 61.

145

145



145



145

145

PLATE IX.

FIG.

1, 2. *MENIPEA JEFFREYSII*, p. 42.

3. *BICELLARIA ALDERI*, p. 70; usual form.

4. ——— ———, with oœcium and a double spine.

5. ——— ———, dorsal surface.

6. ——— ———, nat. size.

7. ——— ———, avicularium.

PLATE X.

FIG.

1. *BUGULA AVICULARIA*, p. 75.

2. ———, dorsal surface.

3. ———, nat. size.

4. ———, showing the attachment of the oöcium to the cell.

5. *BUGULA TURBINATA*, p. 77.

6. ———, dorsal surface.

7. ———, nat. size.

8. ———, avicularium

PLATE XI.

FIG.

1. *BUGULA FLABELLATA*, p. 80 ; a portion of a shoot,
nat. size.
- 2, 3. ——— ———, front and dorsal surfaces.
4. ——— ———, avicularium.
5. *BUGULA CALATHUS*, p. 82 ; nat. size.
- 6, 7. ——— ———, front and dorsal surfaces.
8. ——— ———, avicularia.

PLATE XII.

FIG.

1. *BUGULA PLUMOSA*, p. 84 ; nat. size.
- 2-4. — — —.
5. — — —, avicularia.
- 6, 7. *BUGULA GRACILIS*, var. *UNCINATA*, p. 86 ; prehensile appendages. See Plate XV.
8. *BUGULA PURPUROTINCTA*, p. 89 ; nat. size.
- 9, 10. — — —, zoœcia.
11. — — —, dorsal surface.
12. — — —, oœcium.

Fig 1.

Plate 10

Fig 5

Fig 2



Fig 7

Fig 11

Fig 4



Fig 3



100 inch

Fig 6



Fig 10

Fig 8

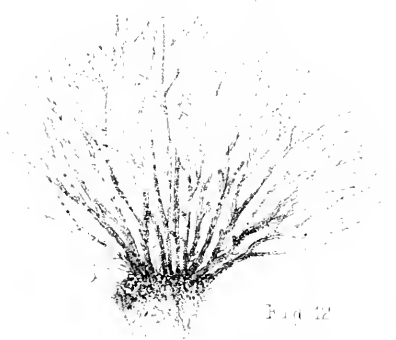


Fig 9

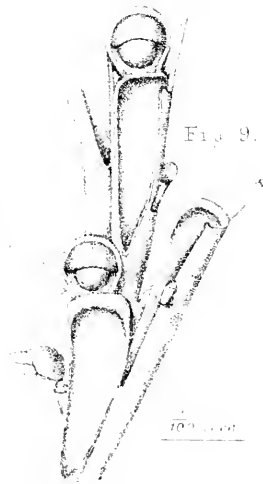


Fig 12



100 inch

PLATE XIII.

FIG.

1-4. CELLARIA FISTULOSA, p. 106.

5-8. CELLARIA SINUOSA, p. 109.

9, 10. CELLARIA JOHNSONI, p. 112.

11. — —, showing the avicularium *in situ*.

12. — —, avicularium detached.



Fig. 1

Fig. 10

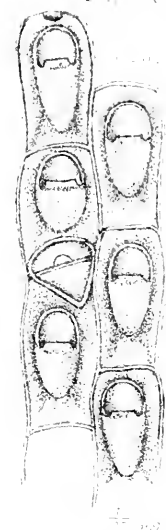


Fig. 3

Fig. 6

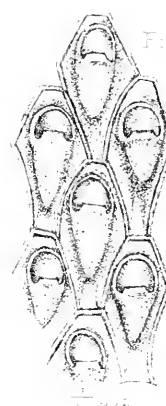


PLATE XIV.

FIG.

1. FLUSTRA CARBASEA, var., p. 123 ; from a specimen in Mr. Norman's collection. See Plate XVI.
2. BUGULA MURRAYANA, p. 92 ; nat. size.
3. ——— ———, var. *a* (FRUTICOSA), nat. size.
4. ——— ———, zoœcia of the normal form.
5. ——— ———, zoœcia of var. FRUTICOSA.
6. ——— ———, dorsal surface.
- 7-9. ——— ———, avicularia, showing the difference in size between those on the front and margin of the cells.
10. FLUSTRA FOLIACEA, p. 115 ; palmate form.
See Plate XVI.

Fig. 1

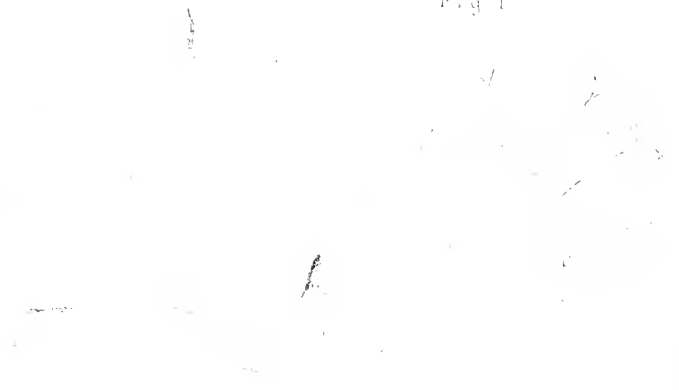


Fig. 5



100 mm.

Fig. 8

100 mm.

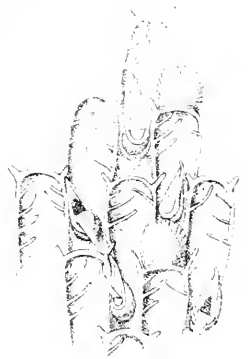
Fig. 2.



Fig. 3



Fig. 4



100 mm.

Fig. 9

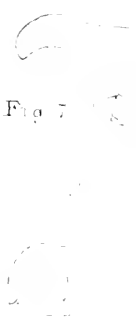


Fig. 7

100 mm.

Fig. 6.



100 mm.

Fig. 10



PLATE XV.

FIG.

1. *BUGULA GRACILIS*, var. *UNCINATA*; p. 86, nat. size.
 - 1 *a.* ———, a single cell, showing the position of the avicularium.
2. ———, zoëcia, front view.
3. ———, dorsal surface.
4. ———, prehensile appendages.
- 4 *a.* ———, primary cell and appendages.
5. *SCHIZOPORELLA VULGARIS*, p. 244; showing the structure of the cell. See Plate XXXVII.
6. ———, var. with umbonate ovicell, and mucro on the front wall.
- 7, 7 *a.* *ESCHAROIDES QUINCUNCIALIS*, p. 339; fragment, magnified and nat. size.
 - 7 *b.* ———, young cell.
 - 7 *c.* ———, oecium and orifice, forming together the "mamillary rising."

Fig 7^b



Fig 7^c



Fig



Fig 1^a



a

Fig 2.



$\frac{1}{100}$ inch

Fig 7.

$\frac{1}{100}$ inch

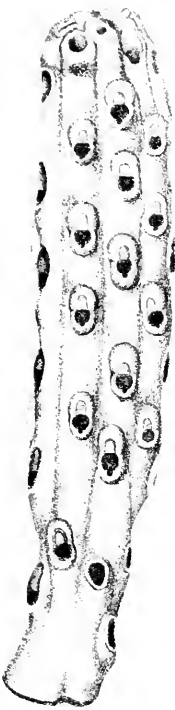


Fig 3



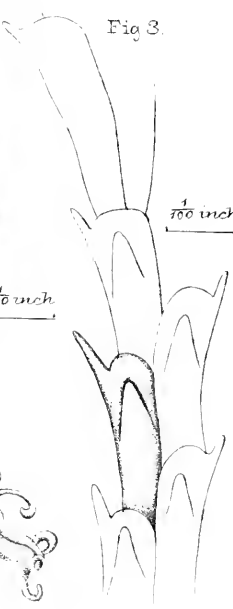
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Fig 5



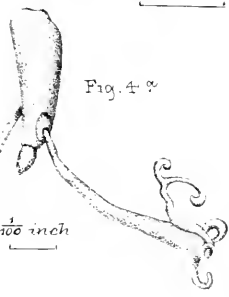
$\frac{1}{100}$ inch

Fig 3.



$\frac{1}{100}$ inch

Fig. 4^a



$\frac{1}{100}$ inch

Fig 4



$\frac{1}{100}$ inch

PLATE XVI.

FIG.

1. FLUSTRA FOLIACEA, p. 115; nat. size.

1 *a*, 1 *b*. ——— ———, zoëcia magnified.

2. FLUSTRA PAPYRACEA, p. 118; nat. size.

2 *a*. ——— ———, zoëcia and ovicells.

3. FLUSTRA SECURIFRONS, p. 120; nat. size.

3 *a*. ——— ———, zoëcia, with avicularia and ovicells.

4. FLUSTRA CARBASEA, p. 123; nat. size.

4 *a*. ——— ———, zoëcia.

Fig. 1a



Fig. 2



Fig. 1a



Fig. 4



Fig. 1b



Fig. 2a



Fig. 3a



Fig. 1

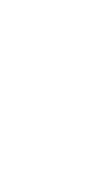


Fig. 3.

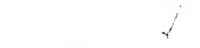


PLATE XVII.

FIG.

- 1, 2. MEMBRANIPORA CATENULARIA, p. 134.
- 3, 4. MEMBRANIPORA MONOSTACHYS, p. 131; linear form. See Plate XVIII.
- 5, 6, 8. MEMBRANIPORA LACROIXII, p. 129; various states.
7. ———, with marginal spines.

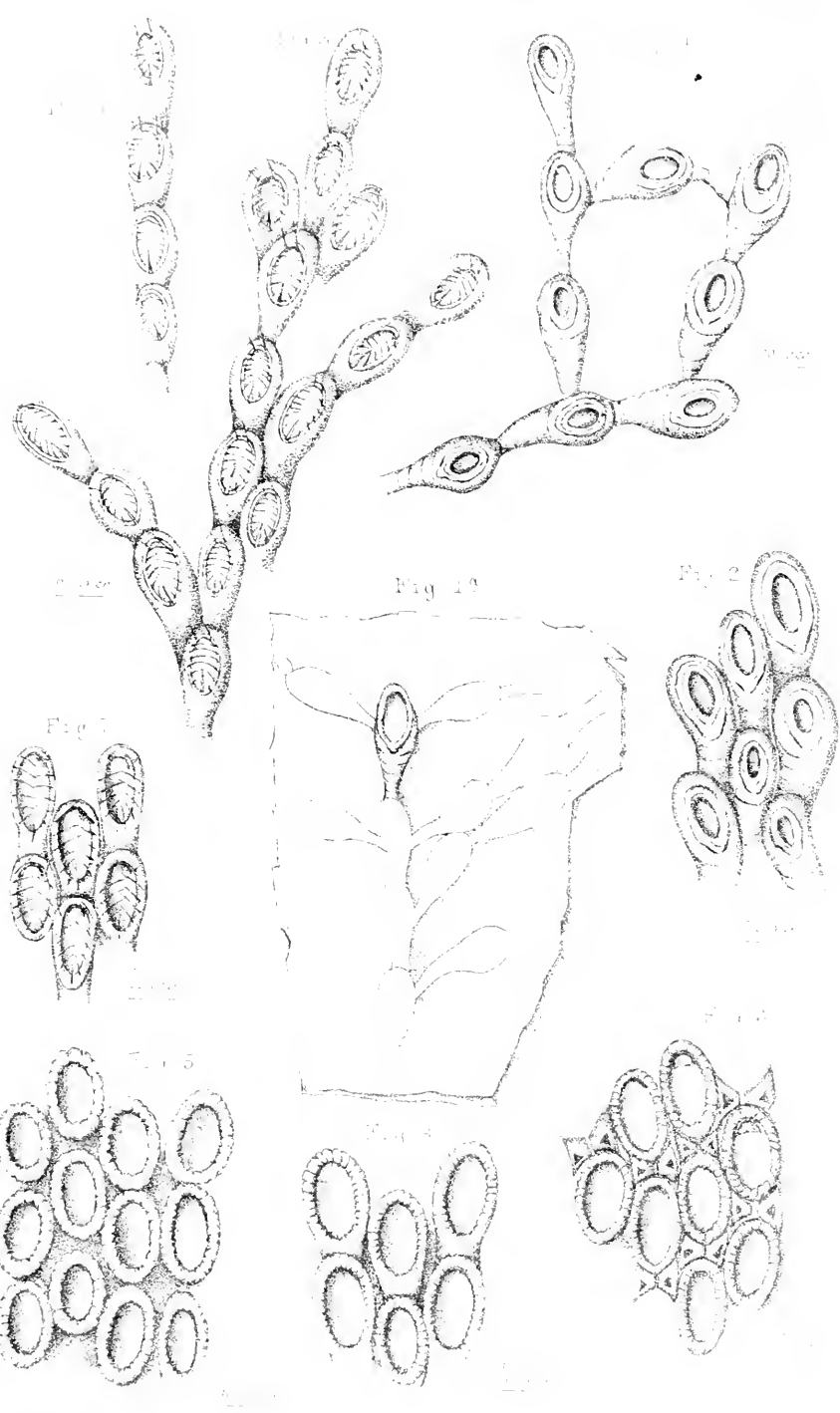


PLATE XVIII.

FIG.

1. *MEMBRANIPORA MONOSTACHYS*, p. 131; nat. size, showing the linear habit of growth.
2. ———, a colony, including one of the rudimentary cells.
3. ———, var. *FOSSARIA*.
4. ———, var. *FOSSARIA*: two zoëcia, viewed sideways.
5. *MEMBRANIPORA MEMBRANACEA*, p. 140.
6. ———, with a number of abnormal cells ("tower-zoëcia" of Nitsche).
7. *MEMBRANIPORA HEXAGONA*, p. 143. After Busk.
8. *SCHIZOPORELLA HYALINA*, p. 271; a colony with suborbicular orifice.
9. ———, with the oëcia borne on imperfectly developed cells.
10. ———, var. with hyaline walls and the lower margin of the orifice deeply sinuated. See Plate XLV. figs. 2 and 3.

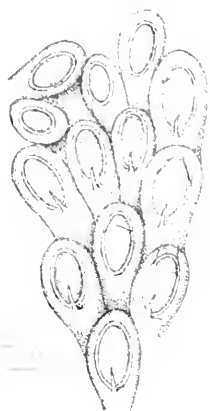
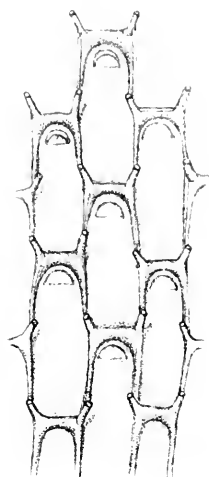


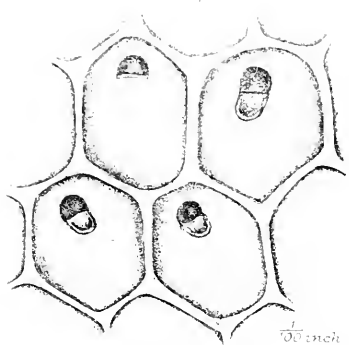
Fig. 3



Fig. 1



$\frac{1}{100}$ inch



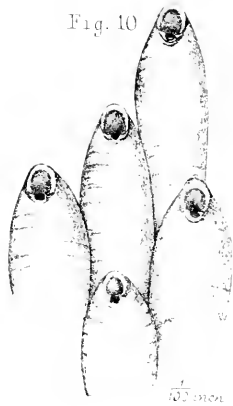
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Fig. 6

Fig. 10

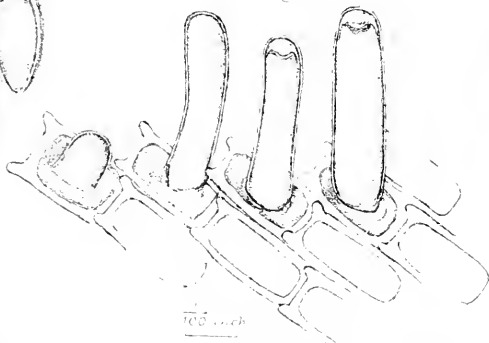


$\frac{1}{100}$ inch



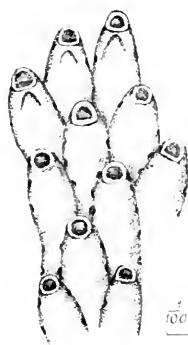
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Fig. 8



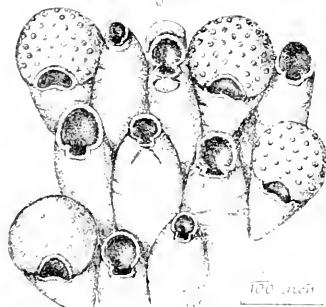
$\frac{1}{100}$ inch

Fig. 4



$\frac{1}{100}$ inch

Fig. 9



$\frac{1}{100}$ inch



PLATE XIX.

FIG.

1. MEMBRANIPORA SPINIFERA, p. 149.
a, b, c. — — —, the pedunculate avicularia.
2. MEMBRANIPORA FLUSTROIDES, p. 151.
- 3-6. MEMBRANIPORA LINEATA, p. 143.
7. MEMBRANIPORA CRATICULA, p. 147.
- 8, 9. MEMBRANIPORA DISCRETA, p. 152.

Fig. 1

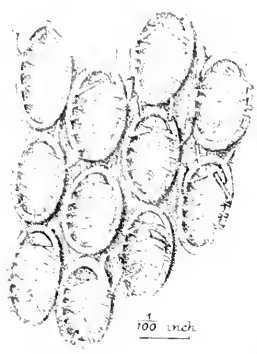


Fig. 2.

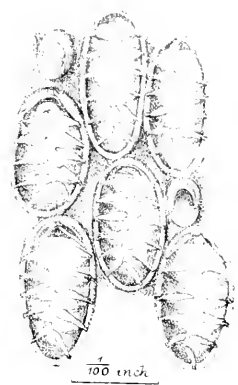


Fig. 4



Fig. 7.

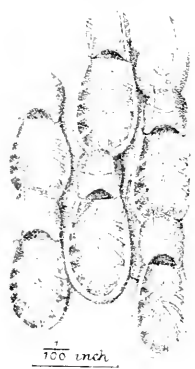


Fig. 5.



Fig. 3

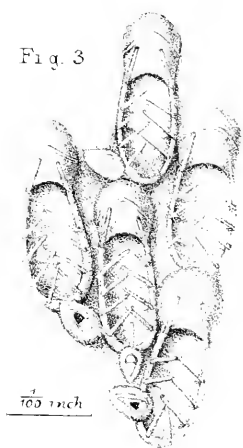


Fig. 6.



Fig. 9



Fig. 8.

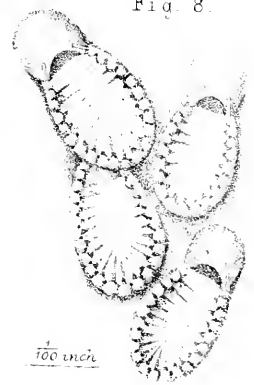
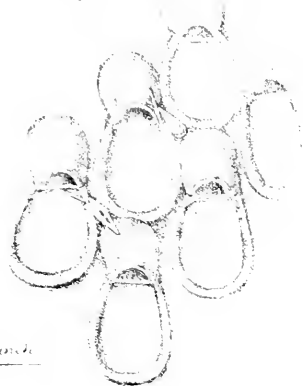


PLATE XX.

FIG.

- 1, 2. MEMBRANIPORA IMBELLIS, p. 160.
3. MEMBRANIPORA DUMERILII, p. 156.
4. MEMBRANIPORA UNICORNIS, p. 154.
- 5, 6. MEMBRANIPORA CURVIROSTRIS, p. 153.
- 7, 8. MEMBRANIPORA SOLIDULA, p. 158.
9. MEMBRANIPORA NODULOSA, p. 170.

Fig. 3



100 mic.

Fig. 2



100 mic.

Fig. 1



100 mic.

Fig. 7



100 mic.

Fig. 4



Fig. 8



100 mic.

Fig. 6



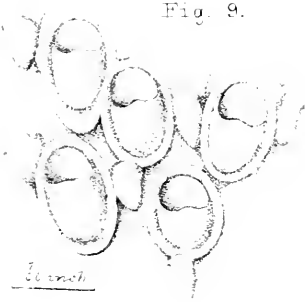
100 mic.

Fig. 5



100 mic.

Fig. 9



100 mic.

PLATE XXI

FIG.

1. MEMBRANIPORA FLEMINGII, p. 162; from a fully developed specimen.
- 1 *a*, 1 *b*. — — —, young zoëcia with the full complement of spines; avicularia partially developed.
- 2, 3. — — —, var., showing the produced portions of the cell below.
4. MEMBRANIPORA CORNIGERA, p. 164. See Plate XXII. fig. 4.
- 5, 6. MEMBRANIPORA AURITA, p. 159.
7. SETOSELLA VULNERATA, p. 181.

Fig 1

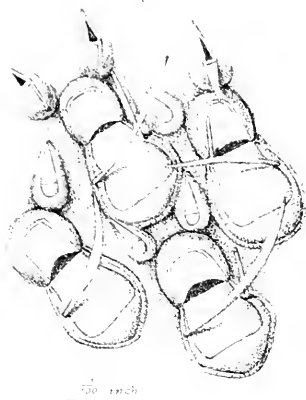


Fig 1^a



Fig 4

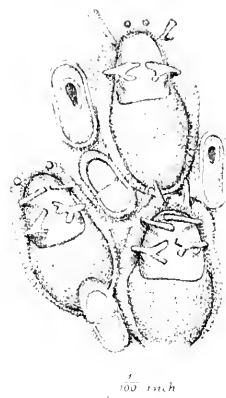


Fig 2

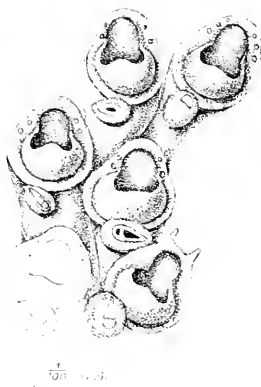


Fig 1^b



Fig 3

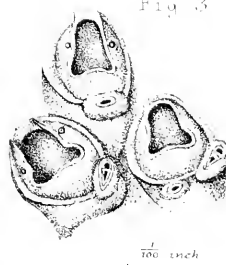


Fig 6

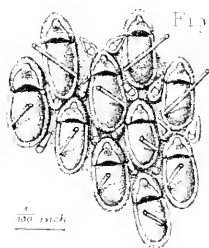


Fig 7

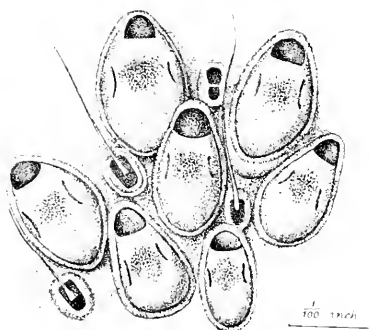


Fig 5

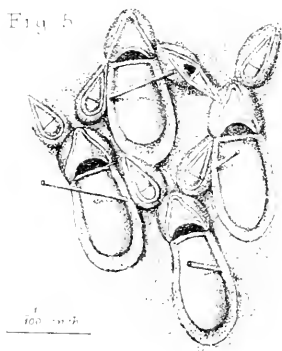


PLATE XXII.

FIG.

1. MEGAPORA RINGENS, p. 172.
2. MEMBRANIPORA MINAX, p. 169.
 - 2 *a*. ——— ———, avicularium.
 - 2 *b*, 2 *c*. ——— ———, young cells.
3. MEMBRANIPORA CORNIGERA, p. 164; from an old specimen, showing the structure of the upper portion of the aperture.
4. MEMBRANIPORA ROSSELI, p. 166.
5. MEMBRANIPORA TRIFOLIUM, p. 167.
6. ——— ———, var. *a* (QUADRATA).

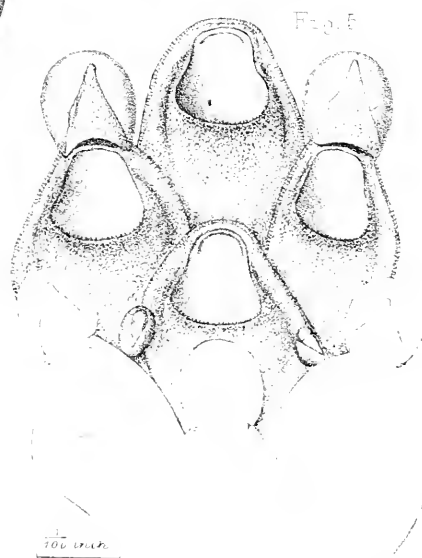
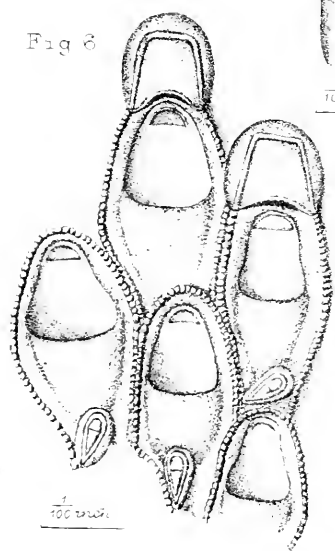
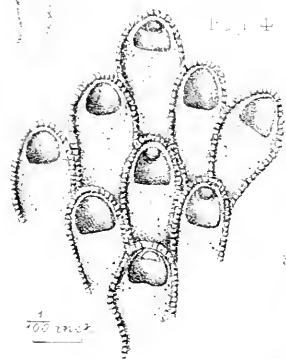


PLATE XXIII.

FIG.

1. MEMBRANIPORA PILOSA, p. 137 ; normal form.
- 2, 3. ——— ———, var. *a* (DENTATA).
4. ——— ———, var. with three spines.
5. MICROPORA CORIACEA, p. 174.
6. ——— ———, with avicularia.
7. ——— ———, with oecia.
8. MICROPORA COMPLANATA, p. 175.
9. ——— ———, more highly magnified, to show the constriction of the orifice.

Fig. 1

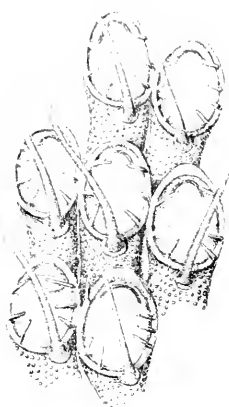
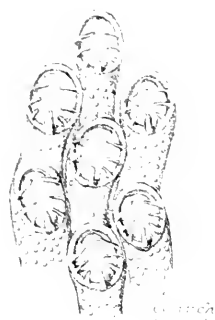


Fig. 3

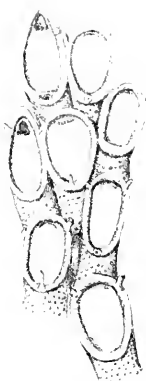


Fig. 4

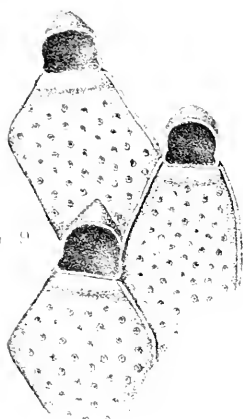


Fig. 6

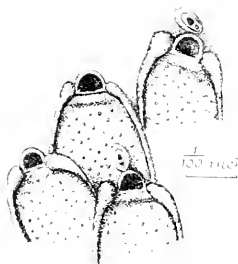


Fig. 5



Fig. 8

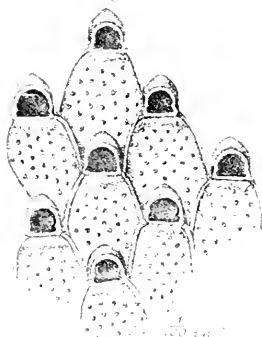


Fig. 7

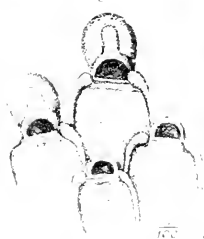


Fig. 5

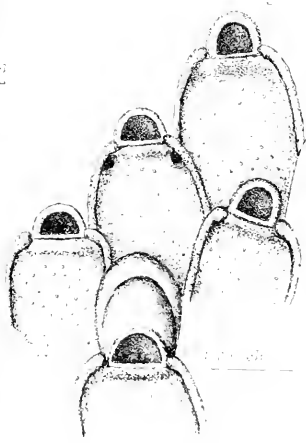


PLATE XXIV.

FIG.

1. SCHIZOPORELLA LINEARIS, p. 247; var. with a single avicularium borne on the side of a short rostrum. See Plate XXXVIII.
2. SCHIZOPORELLA UMBONATA, p. 264. After Busk.
3. CRIBRILINA PUNCTATA, var., p. 190. See Plate XXVI.
4. LEPRALIA PALLASIANA, p. 297; var. with much produced peristome. See Plate XXXIII.
5. STEGANOPORELLA SMITTH, p. 178; with avicularia.
6. ———, showing the oecium with the lid thrown back.
7. LEPRALIA EDAX, p. 311.
- 7 a. ———, the large, pointed avicularia. After Smitt.
8. ———, nat. size, incrusting a univalve shell.

Fig. 1.

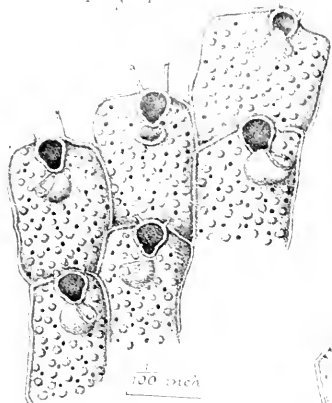


Fig. 7.

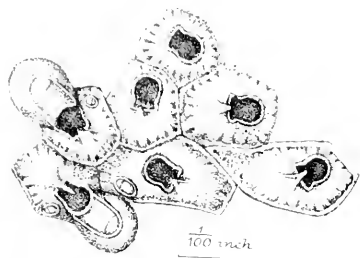


Fig. 7a



Fig. 3



Fig. 2.

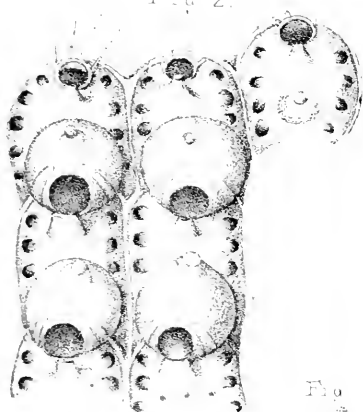


Fig. 4

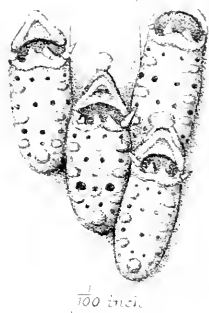


Fig. 8



Fig. 6

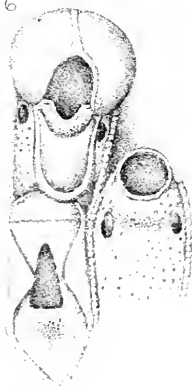


Fig. 5.

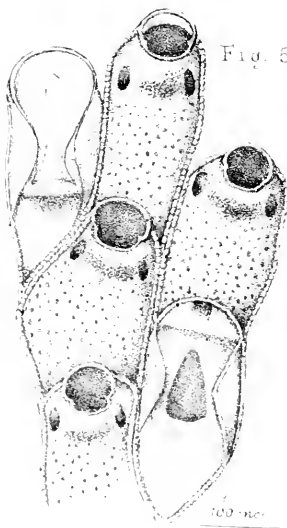
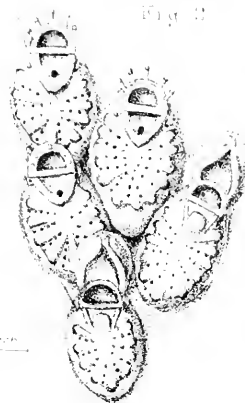


PLATE XXV.

FIG.

- 1, 2. CRIBRILINA RADIATA, p. 185; *innominata* form.
3. ———, *radiata* form.
4. ———, var.
5. ——— with vibraculoid setæ.
6. ———, *radiata* form.
7. ———, dwarf var.
- 8, 9. ———, avicularia, showing the varieties of form.
10. CRIBRILINA GATTYÆ, p. 198.
- 11, 12. CRIBRILINA ANNULATA, p. 193.



$\frac{1}{100}$ inch

Fig. 1

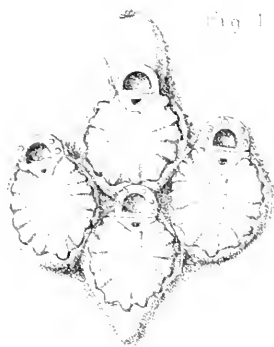
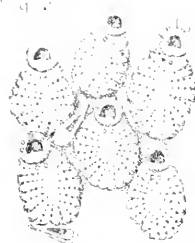


Fig. 2



$\frac{1}{100}$ inch

Fig. 5.



Fig. 4



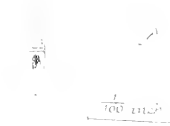
$\frac{1}{100}$ inch

Fig. 6



$\frac{1}{100}$ inch

Fig. 9



$\frac{1}{100}$ inch

Fig. 7.



$\frac{1}{100}$ inch

Fig. 10

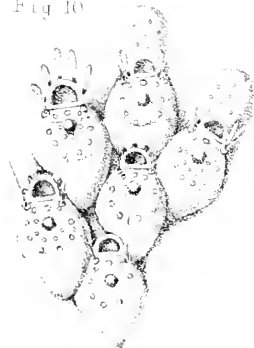
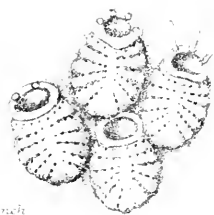


Fig. 11



$\frac{1}{100}$ inch

Fig. 12

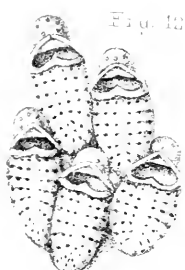


PLATE XXVI.

FIG.

1-3. CRIBRILINA PUNCTATA, p. 190.

See Plate XXIV, fig. 3.

4. ———, var. α .

5-7. CRIBRILINA FIGULARIS, p. 196.

8. ———, var. α (FISSA).

9. MICROPORELLA IMPRESSA, p. 214.

See Plate XXIX, figs. 10, 11.

10. ———, var. β (GLABRA).

11. ———, cell with ocellum.

Fig 1



Fig 2



Fig 3

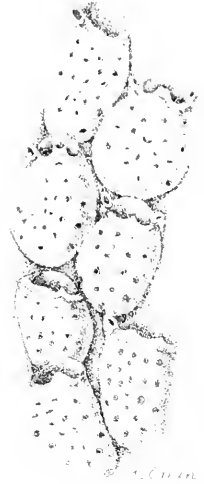


Fig 4

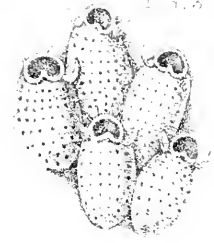


Fig 5

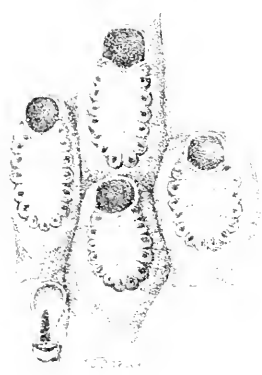


Fig 6



Fig 7



Fig 8



Fig 9

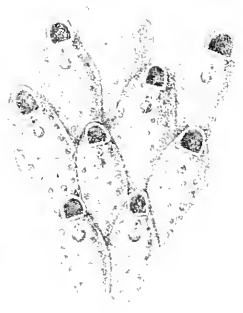


Fig 10



Fig 11



Wheat - flower

Wheat - flower

PLATE XXVII.

FIG.

- 1-4. MEMBRANIPORELLA NITIDA, p. 200; various forms.
5. ——— ———, var. with small number of ribs.
6. ——— ———, primary cell.
7. ——— ———, group of cells in an early stage.
8. ——— ———, outline showing the structure of the cell.
9. MEMBRANIPORELLA MELOLONTHA, p. 202.
10. ——— ———, nat. size.

Fig 2



Fig 5



Fig 1

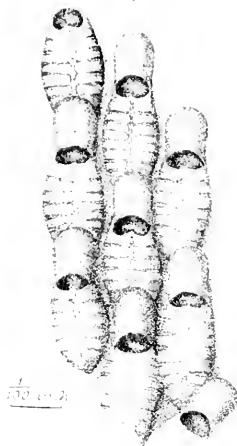


Fig 6

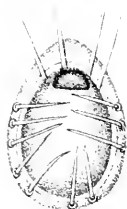


Fig 10



Fig 7

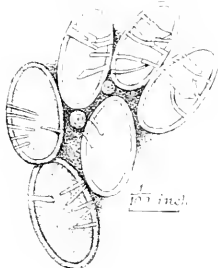


Fig 8



Fig 9

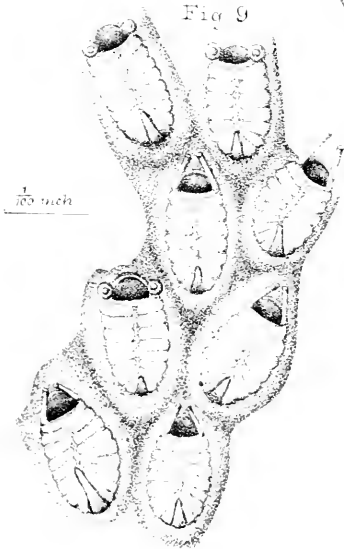


Fig 3

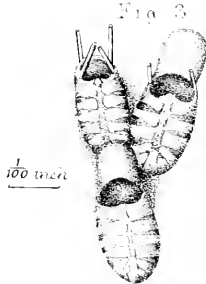


Fig 4

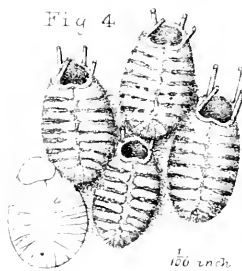


PLATE XXVIII.

FIG.

1. *MICROPORELLA CILIATA*, p. 206.
2. ———, granular var. with normal avicularia.
3. ———, primary cell.
4. ———, dwarf var.
5. ———, var. with umbo and areolated ovicell.
6. ———, Australian var.
7. ———, var. *PERSONATA*.
8. ———, two forms of avicularium.
- 9, 10. *MICROPORELLA MALUSII*, p. 211.
Sec Plate XXIX. fig. 12.
11. ———, var. β (*VITREA*).

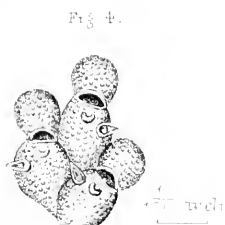


Fig. 5.



Fig. 6.

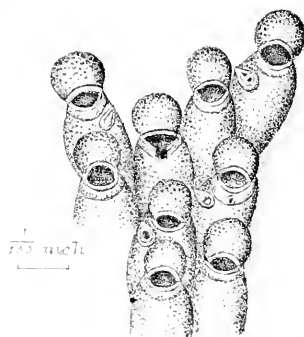


Fig. 7.



Fig. 8.

Fig. 9.

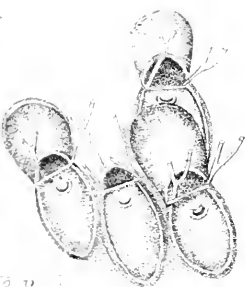


Fig. 10.

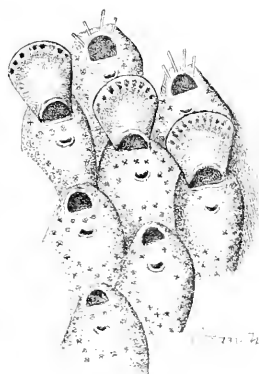




PLATE XXIX.

FIG.

- 1, 2. *PORELLA MINUTA*, p. 326.
- 3-5. *SCHIZOPORELLA AURICULATA*, p. 260.
6. ——— with spatulate avicularia.
7. ———, var. α (OCHRACEA).
8. ———, var. β (CUSPIDATA).
9. ———, showing the different forms of avicularium.
- 10, 11. *MICROPORELLA IMPRESSA*, p. 214; var. α .
12. *MICROPORELLA MALUSII*, p. 211, var. invested by a smooth calcareous crust*.

* This figure is not referred to in the text

PLATE XXX.

FIG.

1, 2. *MICROPORELLA VIOLACEA*, p. 216.

3. ———, var. *a*.

4. ———, Crag form, showing the diversities in the size of the zoëcium.

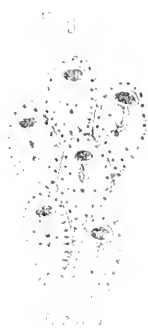
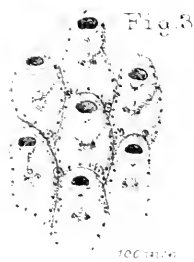
5. *SCHIZOPORELLA CRUENTA*, p. 270.

6. *SCHIZOPORELLA VENUSTA*, p. 276.

6 *a*. ———, showing the form of the orifice and the avicularian area.

7. ———, showing a group of more or less aborted cells.

8, 9. *SCHIZOPORELLA DISCOIDEA*, p. 265.



TOOTHING

Fig. 11

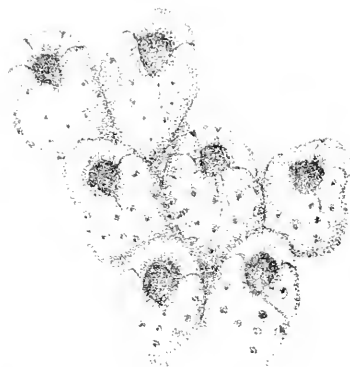


Fig. 15

Fig. 16

Fig. 17

Fig. 18



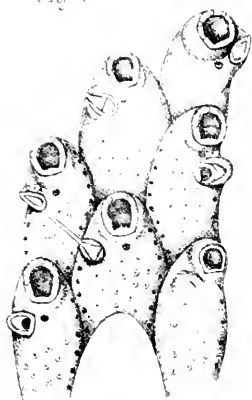
PLATE XXXI.

FIG.

1. *DIPORULA VERRUCOSA*, p. 220.
2. ——— ———, nat. size.
3. *LEPRALIA FOLIACEA*, p. 300; crustaceous state*.
- 4, 5. *PORINA BOREALIS*, p. 229.
6. ——— ———, nat. size.
- 7, 8. *PALMICELLARIA ELEGANS*, p. 378.
9. ——— ———, nat. size.

* There is no reference to this figure in the text.

Fig 1



$\frac{1}{100}$ inch

Fig 2



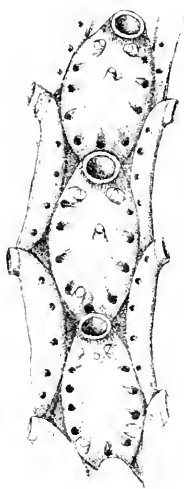
Fig 6.



Fig 9.

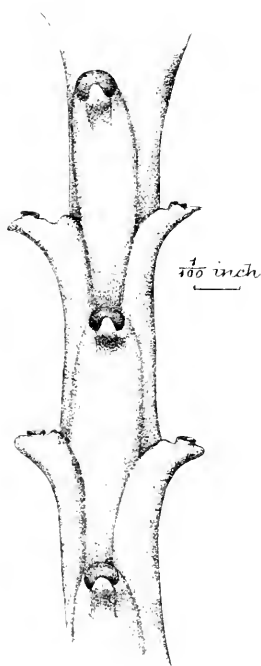


Fig. 4.



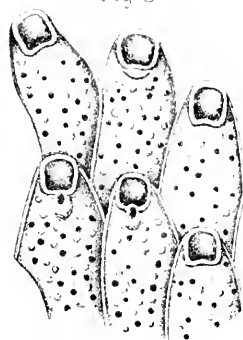
$\frac{1}{100}$ inch.

Fig. 7.



$\frac{1}{100}$ inch

Fig 3



$\frac{1}{100}$ inch

Fig. 8.



Fig 5.



$\frac{1}{100}$ inch

PLATE XXXII.

FIG.

1-3. CHORIZOPORA BRONGNIARTII, p. 224.

1 *a*. ——— ———, a colony, nat. size.

4. ——— ———, detached zoœcia, showing the tubular
connexions round the edge.

5. LEPRALIA POLITA, p. 315.

6-9. PORINA TUBULOSA, p. 230.

Fig. 1



$\frac{1}{100}$ inch

Fig. 2



$\frac{1}{100}$ inch

Fig. 3

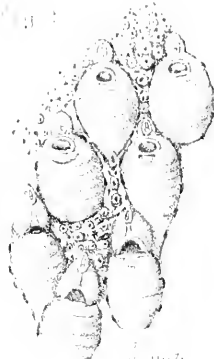


$\frac{1}{100}$ inch

Fig. 4



Fig. 5



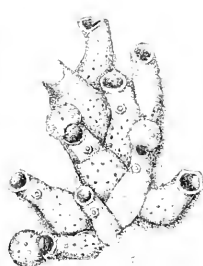
$\frac{1}{100}$ inch

Fig. 6



$\frac{1}{100}$ inch

Fig. 7



$\frac{1}{100}$ inch

Fig. 8

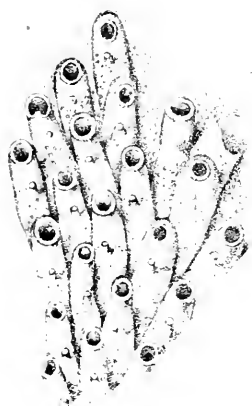


Fig. 9



$\frac{1}{100}$ inch

Fig. 10



$\frac{1}{100}$ inch

Fig. 11

Fig. 12

PLATE XXXIII.

FIG.

1, 2. *LEPRALIA PALLASIANA*, p. 297. See Plate XXIV.
fig. 4.

3. — — — —, variety.

4. *LEPRALIA CANTHARIFORMIS*, p. 299. After Busk.

5, 6. *LEPRALIA ADPRESSA*, p. 307.

7. — — — —, oœcium.

8, 9. *LEPRALIA HIPPOPUS*, p. 309.

10. *ANARTHIROPORA MONODON*, p. 233.

11. — — — —, showing the stellate character of the
pores.

Fig. 1

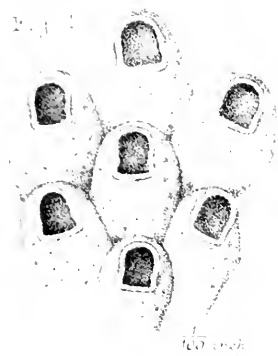


Fig. 3



Fig. 4

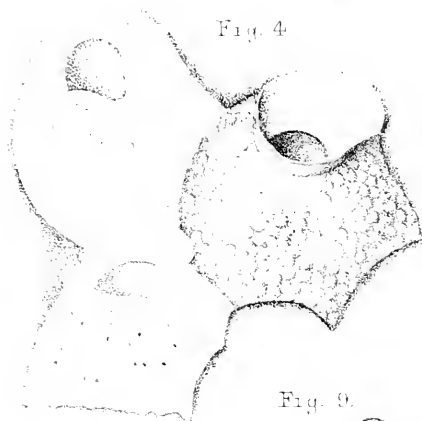


Fig. 5



Fig. 6



Fig. 8

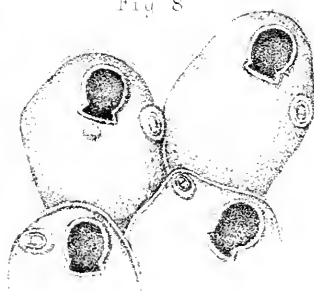


Fig. 9



Fig. 10



PLATE XXXIV.

FIG.

1. *MUCRONELLA COCCINEA*, p. 376.
2. ——— ———, granular form.
3. ——— ———, tessellated form.
- 4-6. ——— ———, var. *mamillata*.
7. *LAGENIPORA SOCIALIS*, p. 235.
8. ——— ———, zoæcium with ovicell.

Fig 2

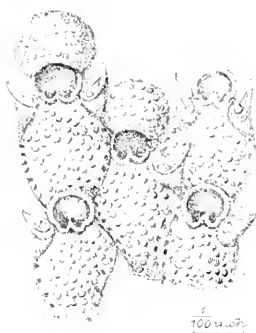


Fig 3

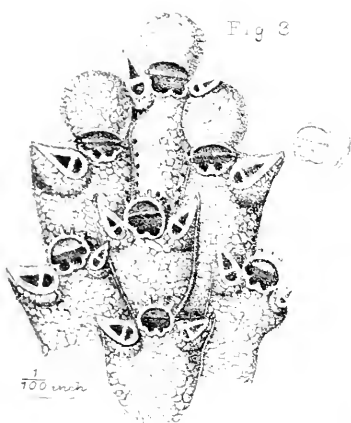


Fig 4

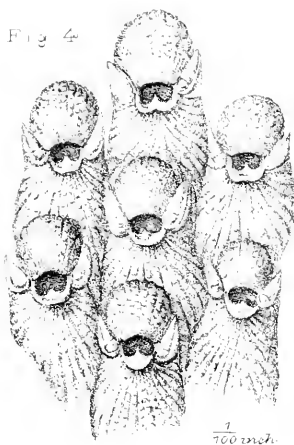


Fig 5



Fig 6



Fig 7



Fig 8

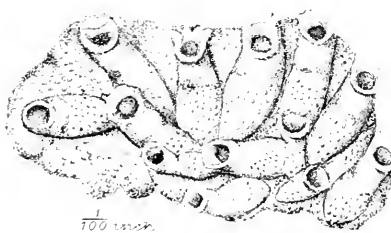
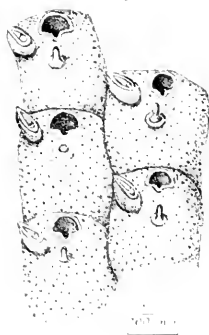


PLATE XXXV.

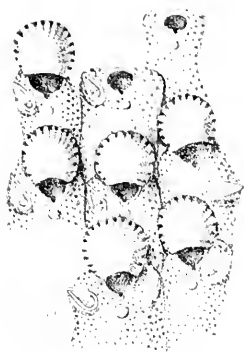
FIG.

1. SCHIZOPORELLA UNICORNIS, p. 328; with oœcia.
2. ——— ———, with a single avicularium.
3. ——— ———, var. ANSATA.
4. ——— ———, var. with umbonate processes.
5. ——— ———, a single zoœcium, with two lateral avicularia and two below.
6. SCHIZOPORELLA SPINIFERA, p. 241.
7. ——— ———, two zoœcia, more highly magnified.
8. ——— ———, zoœcium with ovicell.
9. SCHIZOPORELLA SIMPLEX, p. 246; a colony with oœcia.
10. ——— ———.

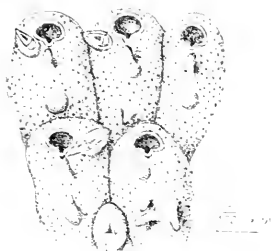
No. 2



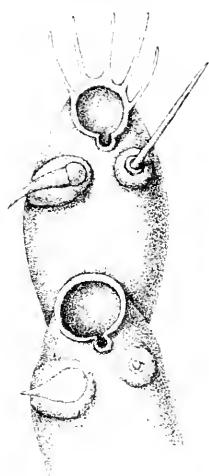
1. $\frac{1}{2}$ 2. $\frac{1}{2}$ 3. $\frac{1}{2}$ 4. $\frac{1}{2}$ 5. $\frac{1}{2}$ 6. $\frac{1}{2}$ 7. $\frac{1}{2}$ 8. $\frac{1}{2}$ 9. $\frac{1}{2}$ 10. $\frac{1}{2}$



1. 2. 3.


$$A \in \mathbb{C}^{n \times n} \quad (1)$$


11. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$



12.8



1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 26

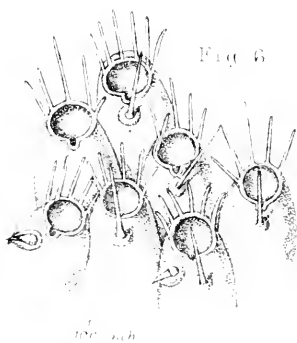
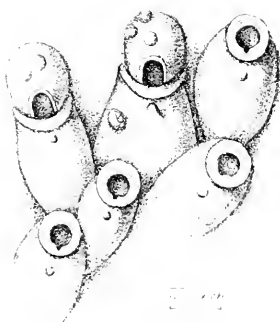

$$F_{1,1} = 0$$


Fig. 10

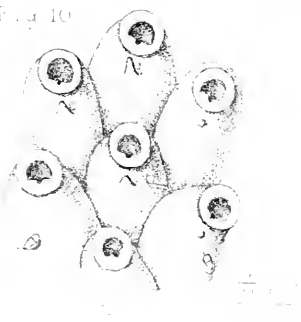


PLATE XXXVI.

FIG.

1. *SMITTIA LANDSBOROVII*, p. 341 ; var. (PORIFERA).
2. ———, var. (CRYSTALLINA).
- 3-5. *SMITTIA MARMOREA*, p. 350.
6. *PORELLA MINUTA*, p. 326 ; littoral form.
7. Young cell of *PORELLA CONCINNA*, showing the primary orifice.
8. Young cell of *PORELLA MINUTA*, with outline of the adult orifice.
- 9, 10. *SCHIZOPORELLA ALDERI*, p. 243.

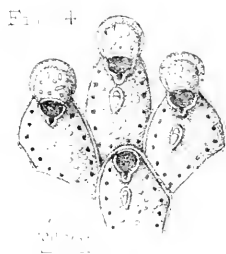
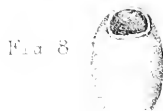
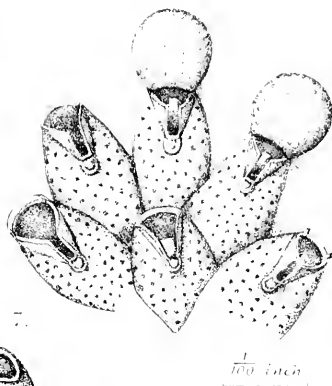
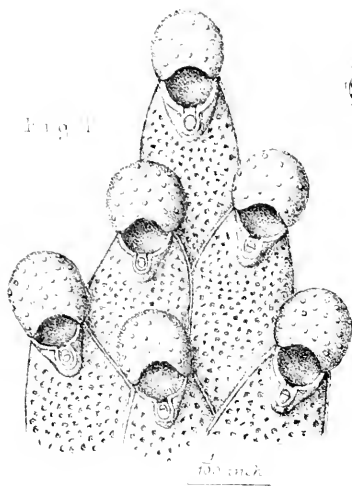


Fig. 9.

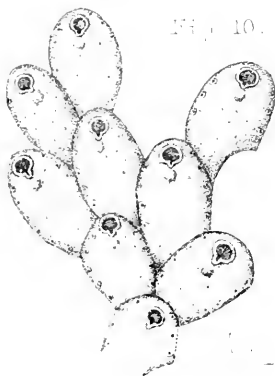
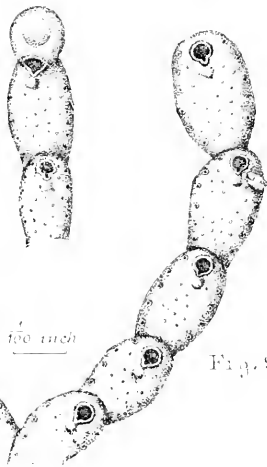


PLATE XXXVII.

FIG.

1. *MASTIGOPHORA DUTERTREI*, p. 279.
2. ————.
3. *MASTIGOPHORA HYNDMANNI*, p. 281.
4. ————, with oœcia and punctured margin.
5. ————, var. with punctured surface and very long vibracula.
6. ————, var. *ENSIFORMIS*.
7. *SCHIZOPORELLA VULGARIS*, p. 244. See Plate XV.
figs. 5, 6.

Fig 1



Fig 6



Fig 2

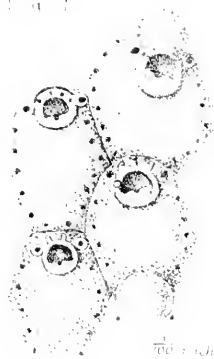


Fig 3



Fig 7



Fig 4

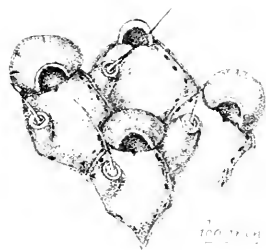


Fig 5

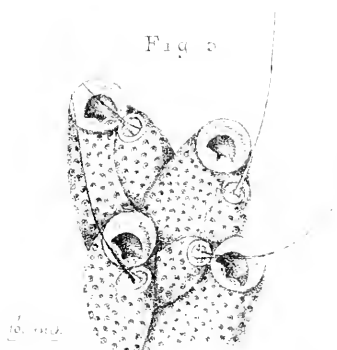


PLATE XXXVIII.

FIG.

1. *MUCRONELLA ABYSSICOLA*, p. 369.
2. ———, with oöcia.
3. *MUCRONELLA MICROSTOMA*, p. 370.
4. ———.
5. *SCHIZOPORELLA LINEARIS*, p. 247 ; with oöcia. See Plate XXIV. fig. 1.
6. ———.
7. ———, old state.
8. ———, single zoöcium, with a rudimentary ovi-celligerous cell on the front wall.
9. ———, avicularium.
10. *SCHIZOPORELLA LINEARIS*, var. *HASTATA*.
- 10*a*. ———, ——— muco and avicularium.

Fig. 1.

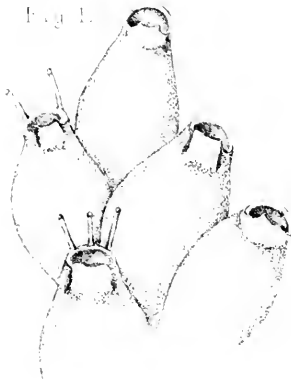


Fig. 2.



Fig. 2.



Fig. 3.

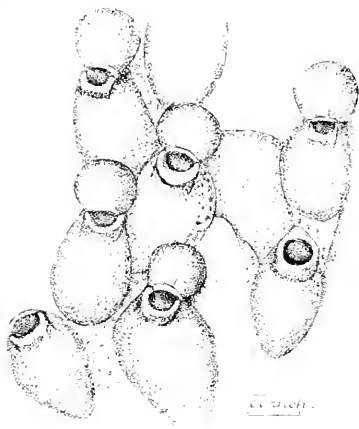


Fig. 4.

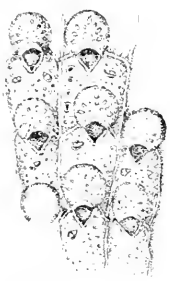


Fig. 5.

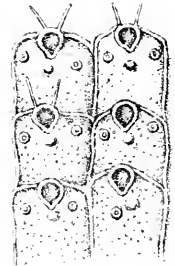


Fig. 6.

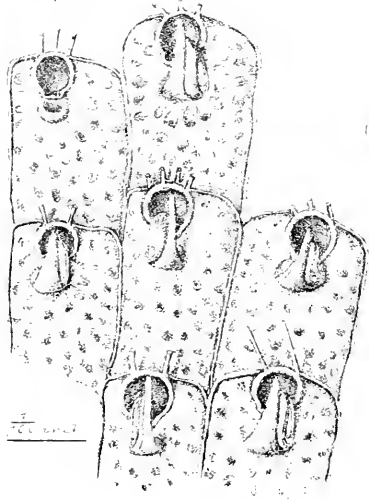


Fig. 7.

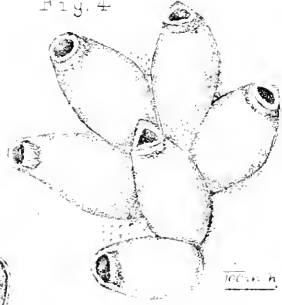


Fig. 7.

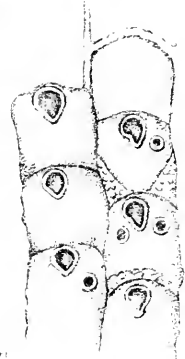


Fig. 8.



Fig. 9.

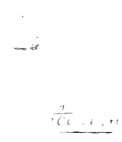


PLATE XXXIX.

FIG.

1. *UMBONULA* ^{*}*VERRUCOSA*, p. 317 ; littoral form.
2. ———, with oœcia, from deeper water.
3. *PORELLA STRUMA*, p. 329.
4. ———.
5. ———, older state.
6. *SCHIZOPORELLA SANGUINEA*, p. 252.
7. ———, erect growth.
8. *MUCRONELLA PAVONELLA*, p. 376.
9. ———, incrusting form.
10. ———, erect foliaceous form.

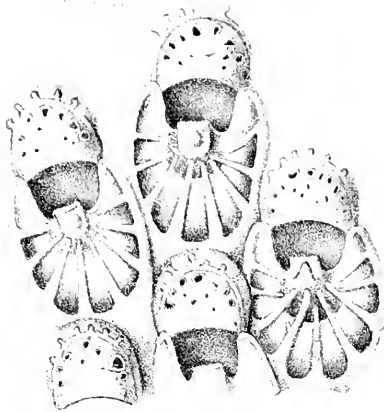
* The name stands as *Umbonella* in the text ; but this form has already been employed as a generic term.

Fig. 1.



$\frac{1}{100}$ inch

Fig. 2.



$\frac{1}{100}$ inch

Fig. 3.



$\frac{1}{100}$ inch

Fig. 4.



$\frac{1}{100}$ inch

Fig. 5.

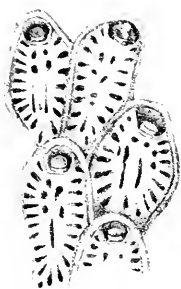


Fig. 6.



Fig. 10.

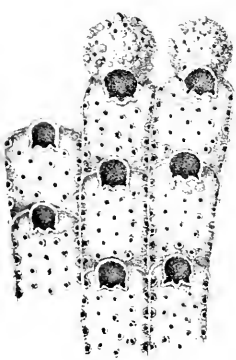


Fig. 8.



$\frac{1}{100}$ inch

Fig. 7.



$\frac{1}{100}$ inch

Fig. 9.

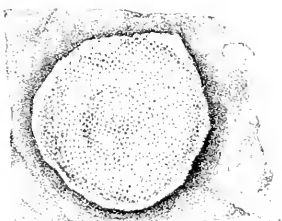


PLATE XL.

FIG.

1. *RHYNCHOPORA BISPINOSA*, p. 385 ; showing marginal cells and the uncinate process.
2. ———— .
3. ———— , with the oral avicularium.
4. ———— , with aviculiferous mamillæ.
5. ———— , outline of zoecium, showing the lateral processes.
6. *SCHIZOPORELLA CRISTATA*, p. 254.
- 6*a*. ———— , primary cell.
7. *SCHIZOPORELLA BIAPERTA*, p. 255.
8. ———— , more highly magnified.
9. ———— , showing oecia and aviculiferous mamillæ.

Fig 2

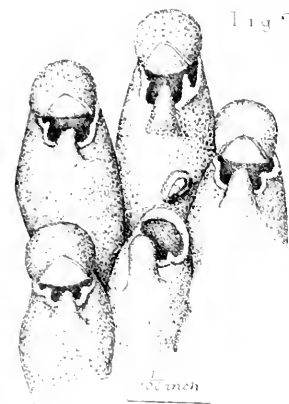


Fig 5

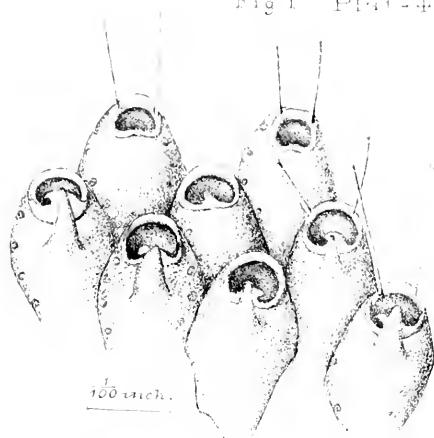


Fig 4

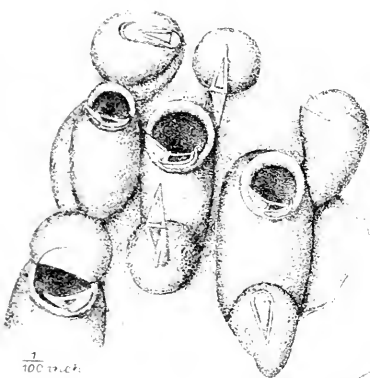


Fig 3

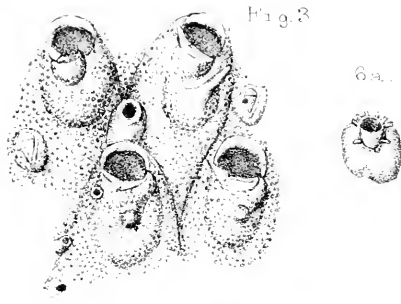


Fig 9

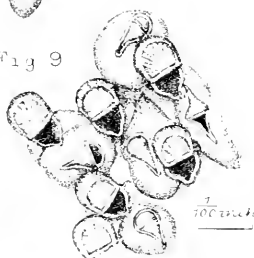


Fig 6

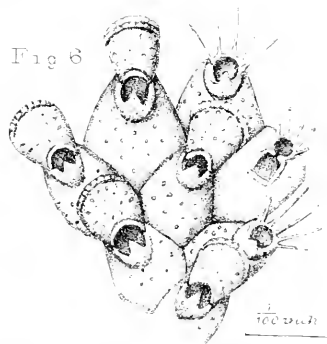


Fig 8

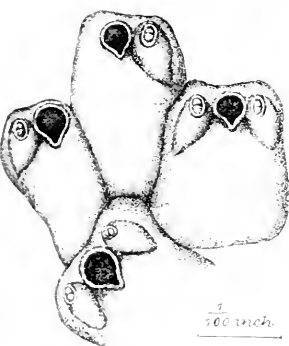


Fig 7



PLATE XLI.

FIG.

1. SCHIZOTHECA FISSA, p. 284.
2. ———, chain of avicularian cells, with an ordinary zoecium interposed.
3. ———, marginal cell and avicularia.
4. SCHIZOTHECA DIVISA, p. 285.
5. ———, with the peristome much elevated.
6. ———, a single cell, highly magnified.
7. SCHIZOPORELLA ARMATA, p. 258.
8. ———, cell with oocium.

Fig 4

Fig 1

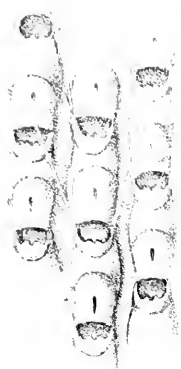
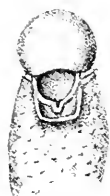


Fig 0.



$\frac{1}{100}$ inch

Fig. 3.

Fig. 2.

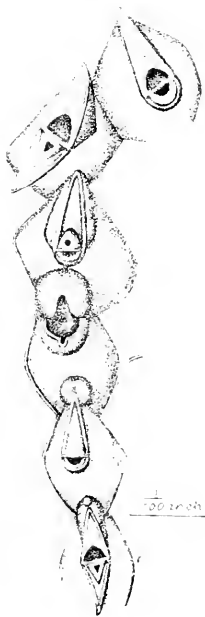
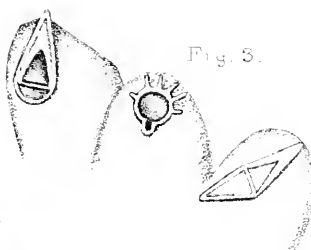


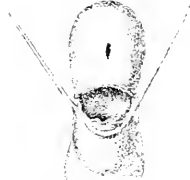
Fig 7

Fig. 5

$\frac{1}{100}$ inch



Fig 6



$\frac{1}{100}$ inch

PLATE XLII.

FIG.

1. SCHIZOPORELLA SINUOSA, p. 266 ; with the peristome slightly developed.
2. ———, var. *a* (ARMATA).
3. ———, with numerous large foramina, and oœcia showing the central pore.
4. ———, tessellated var.
5. ———.
6. ———, a young cell showing the primary orifice.
7. SMITTIA CHEILOSTOMA, p. 349 ; with oœcia.
8. ———.
9. SMITTIA BELLA, p. 352. After Busk.
10. ———, with oœcium. Ditto.

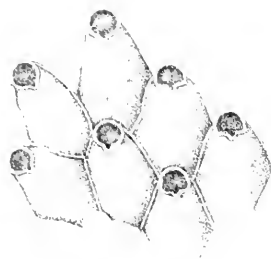


Fig. 1

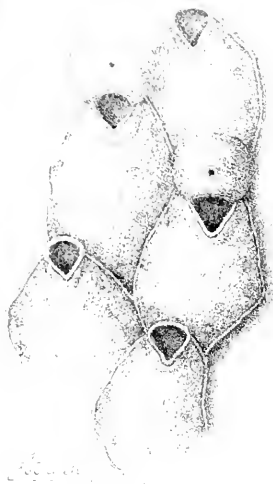


Fig. 2



Fig. 3

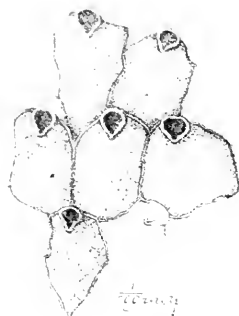


Fig. 4



Fig. 5

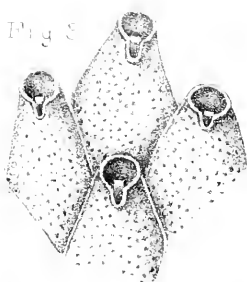


Fig. 6

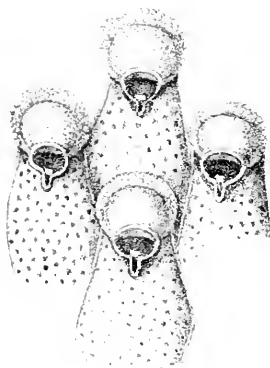


Fig. 7



Fig. 8

PLATE XLIII.

FIG.

1. PHYLACTELLA LABROSA, p. 357.
2. ——— ———.
3. PHYLACTELLA COLLARIS, p. 358.
4. LEPRALIA PERTUSA, p. 305; with avicularia.
5. ——— ———.
6. SCHIZOPORELLA CECILII, p. 269.

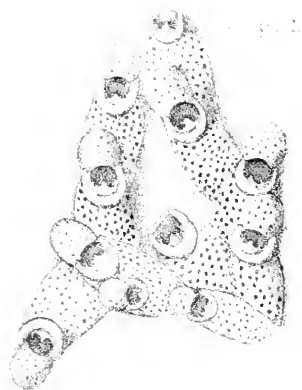
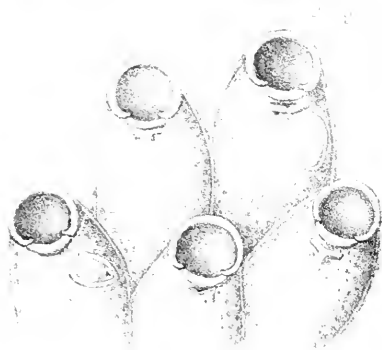


Fig. 1



Fig. 2

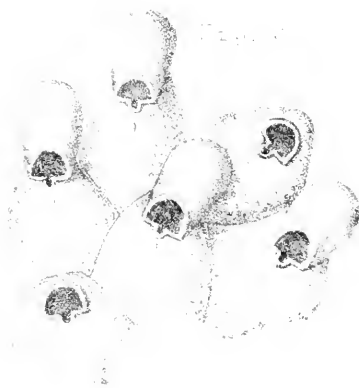


PLATE XLIV.

FIG.

1. HIPPOTHOA DIVARICATA, p. 288. See Plate I. fig. 2.
2. — —, single cell, to show the form of orifice.
3. — —, var. β (CARINATA).
4. — —, var. α (CONFERTA).
5. HIPPOTHOA FLAGELLUM, p. 293.
6. — —, zoecium, showing form of orifice, with
ovicelligerous cells attached.
7. — —, nat. size.

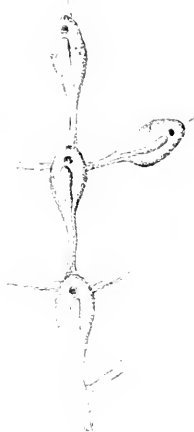


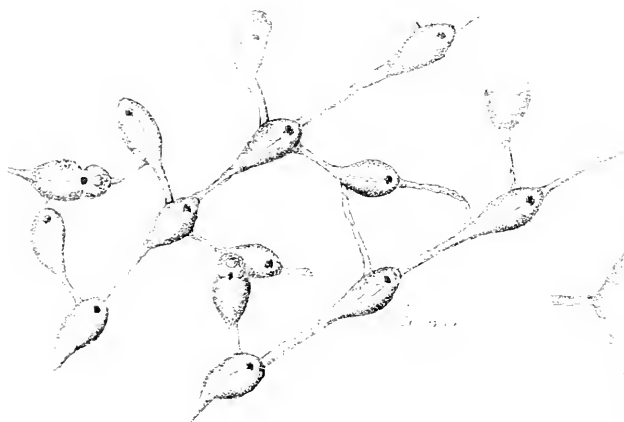
Fig. 2



Fig. 3



Fig. 4



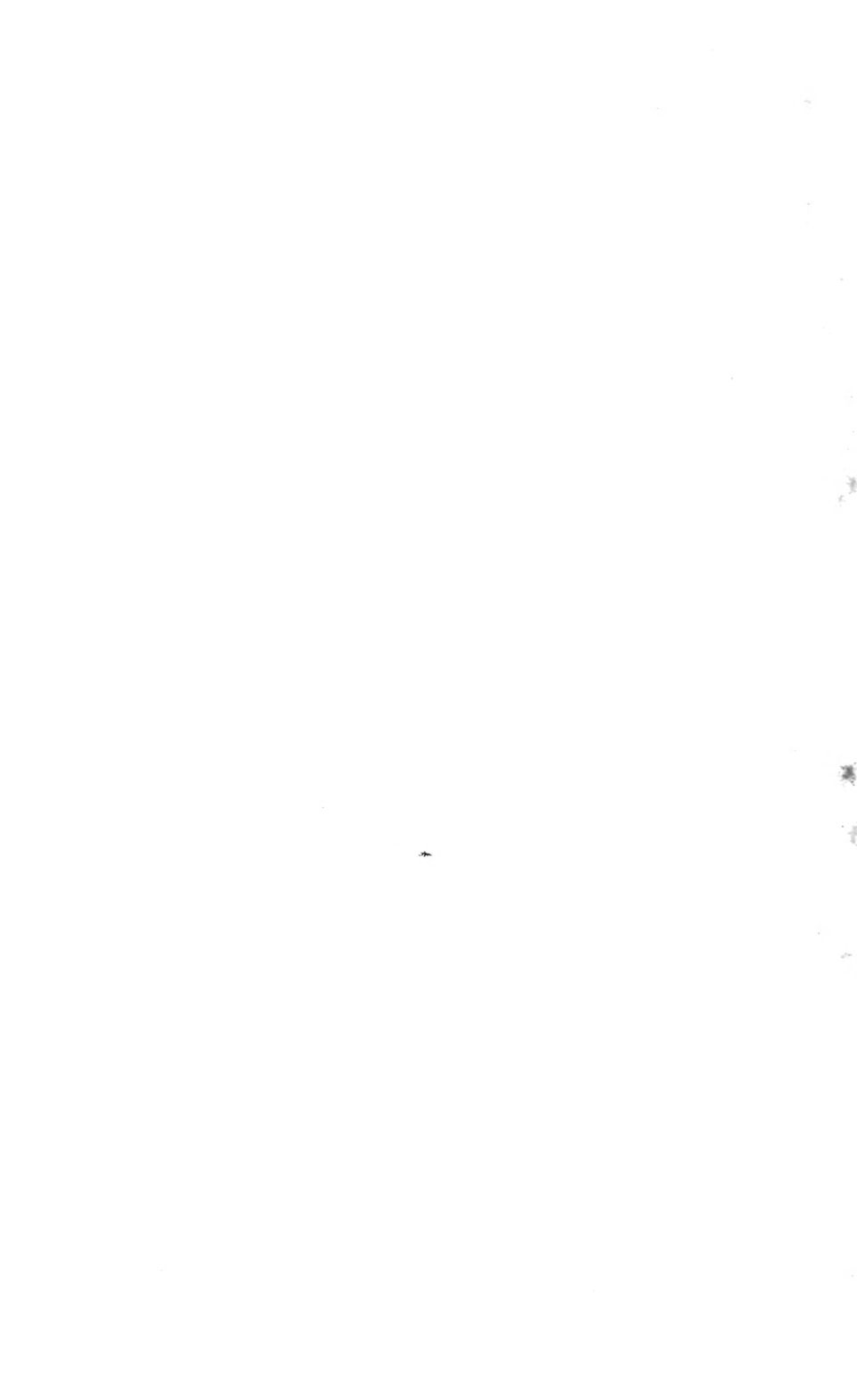


PLATE XLV.

FIG.

1. MICROPORELLA MALUSII, var. THYREOPHORA,
p. 212.
2. SCHIZOPORELLA HYALINA, var. CORNUTA, p. 273.
3. ———, var. from Santa Cruz, with elongated
cell, p. 274.
4. PORELLA COMPRESSA, p. 330; zoëcia. See wood-
cut, p. 322.
5. ———, detached group of cells on the sur-
face of the zoarium.
6. ———, zoëcia deeply immersed and with
sinuated orifice.
- 7, 7 a. ———, showing the primary orifice :
7 b, outline of adult orifice.

Fig. 4

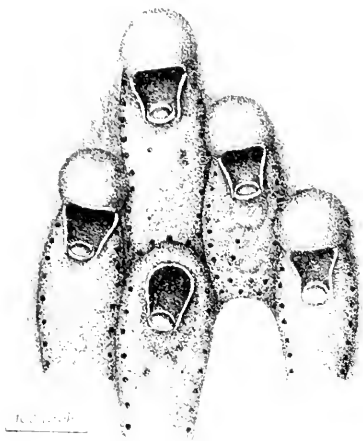


Fig. 5



Fig. 6

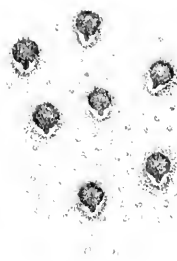


Fig. 3

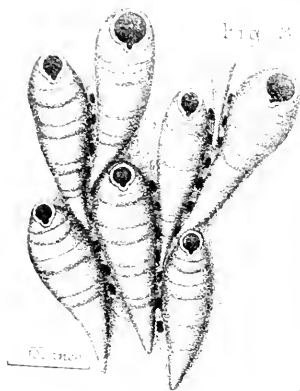


Fig. 7



Fig. 8



Fig. 9

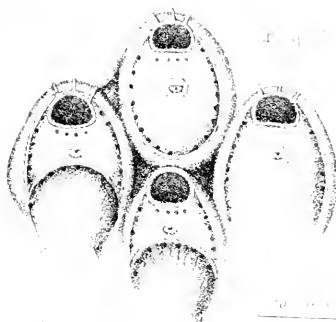


Fig. 10



Fig. 11



Fig. 12



PLATE XLVI.

FIG.

1. *PORELLA CONCINNA*, p. 323.
2. ———, var. *a* (BELL), from a British specimen.
3. ———, with oöcia, showing the central pore and the rib-like processes.
4. ———.
5. ———, with spatulate avicularia.
6. ———, var. *a*, from a Canadian specimen.
7. ———, with a porous surface.
8. ———, old state.
9. ———, var. *β* (GRACILIS).
10. ———, with spatulate and normal avicularia.
- 11-13. ———, vars.

Fig. 1



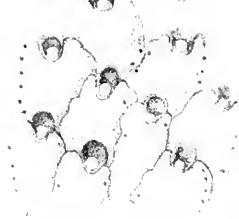
$\frac{1}{100}$ inch

Fig. 4



$\frac{1}{100}$ inch

Fig. 2.



$\frac{1}{100}$ inch

Fig. 3.



Fig. 5

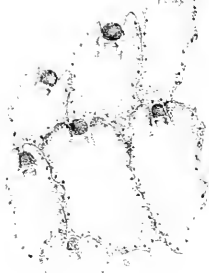


$\frac{1}{100}$ inch

Fig. 7.



Fig. 6.



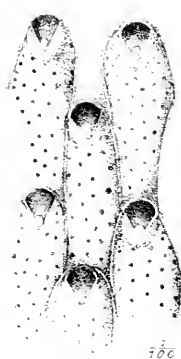
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Fig. 8.



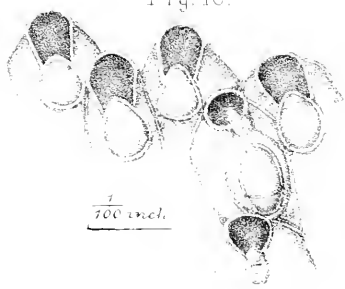
$\frac{1}{100}$ inch

Fig. 9.



$\frac{1}{100}$ inch

Fig. 10.



$\frac{1}{100}$ inch

Fig. 11



$\frac{1}{100}$ inch

Fig. 12.



$\frac{1}{100}$ inch

Fig. 13.



PLATE XLVII.

FIG.

1. *LEPRALIA FOLIACEA*, p. 300; one of the chambers of the foliated zoarium.
2. — — —, a young specimen clasping a stem. After Milne-Edwards.
3. — — —, normal zoëcia.
4. — — —, var. β (*BIDENTATA*).
5. *ESCHAROIDES ROSACEA*, p. 336; from a remarkably fine specimen of Mr. Norman's, about nat. size.
6. — — —, nat. size.
7. — — —, adult zoëcia.
8. — — —, cluster of cells from the margin of a colony.
9. — — —, a young zoëcium, showing the avicularium before it is inclosed by the secondary orifice.
10. *PORELLA LEVIS*, p. 334, nat. size.
11. — — —, zoëcia.

Fig. 1.



Fig. 3.



Fig.



Fig. 4.



Fig. 7.

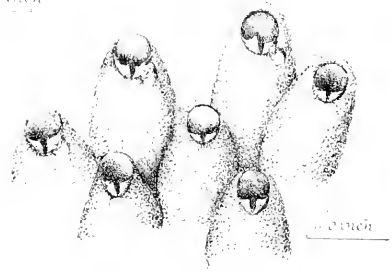


Fig. 9.



Fig. 5.



Fig. 6.

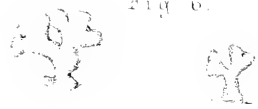


Fig. 1.

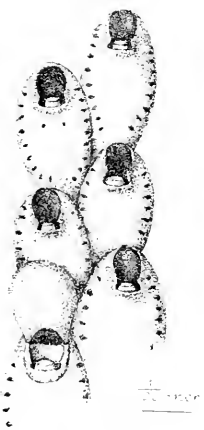


Fig. 10.



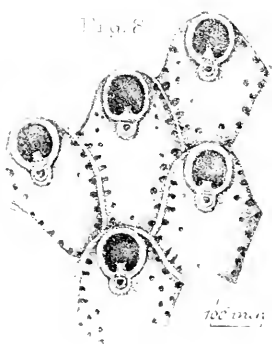
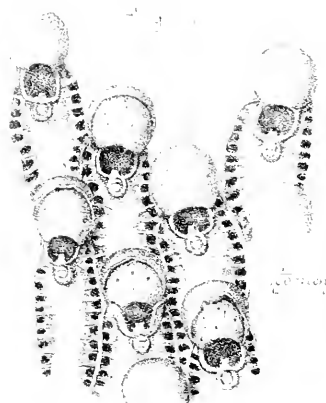
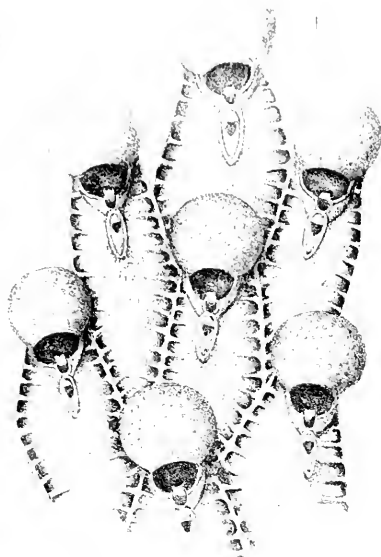
Fig. 8.



PLATE XLVIII.

FIG.

1. SMITTIA RETICULATA, p. 346 ; with oœcia.
2. ———, var.
3. ———, monstrosity ; union of two cells.
4. ———, young cell.
5. ———, outline of a single adult cell.
6. SMITTIA LANDSBOROVII, p. 341.
7. ———, old and highly calcified.
8. ———, with the peristome slightly developed.
9. ———, with elongate and narrow cells.



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PLATE XLIX.

FIG.

- 1-3. *SMITTIA TRISPINOSA*, p. 353 ; vars.
4. ——— ———, var. α (*JEFFREYSI*).
5. ——— ———, var. without raised peristome and with
very numerous oval avicularia.
6. ——— ———, old and highly calcified.
7. ——— ———, with oecia.
8. ——— ———, smooth, marginal cells.
9. *PHYLACTELLA EXIMIA*, p. 359*.
- 10, 11. *SMITTIA AFFINIS*, p. 348.

* In the text this figure is wrongly numbered 11.

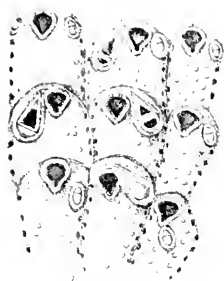


Fig. 104

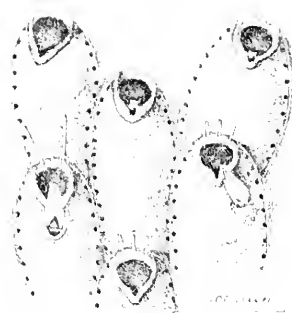


Fig. 105

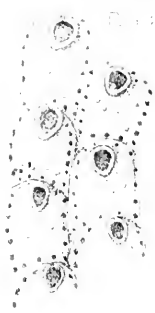


Fig. 106



Fig. 107



Fig. 108



Fig. 109

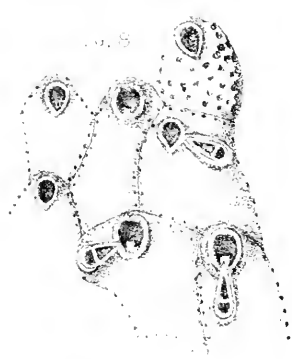


Fig. 110



Fig. 111



Fig. 112

Fig. 113

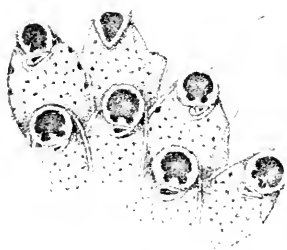


Fig. 114



Fig. 115

Fig. 116

PLATE L.

FIG.

1, 2. *MUCRONELLA PEACHII*, p. 360. See Plate LI.
figs. 1, 2.

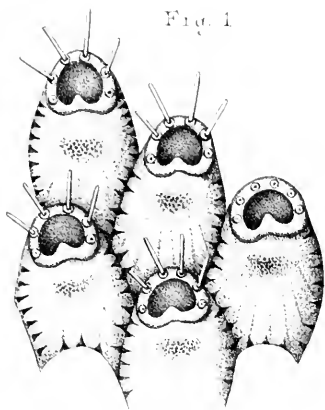
3. — — —, smooth form.

4, 5. — — —, old states, showing the growth of the
calcareous crust over the surface.

6, 8. *MUCRONELLA VENTRICOSA*, p. 363.

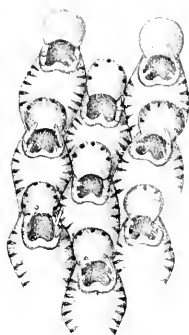
7. — — —, young cells.

Fig. 1.



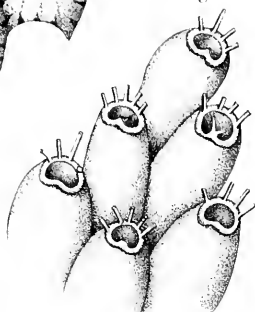
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Fig. 2.



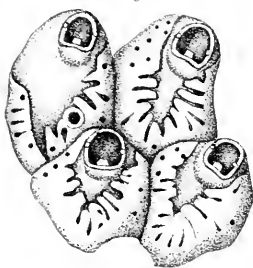
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Fig. 3.



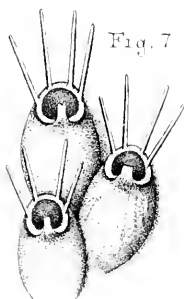
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Fig. 5.



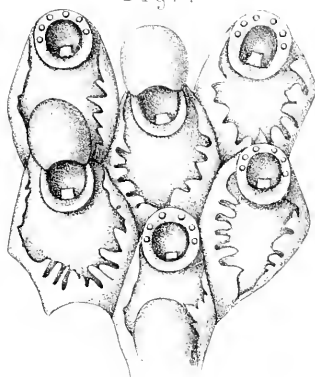
$\frac{1}{100}$ inch

Fig. 7.



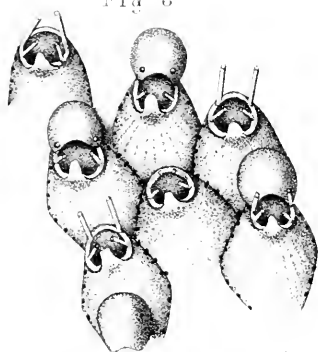
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Fig. 4.



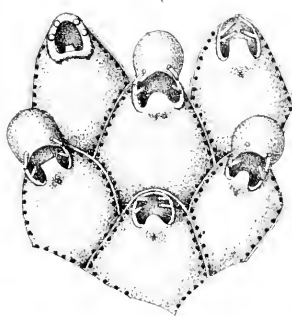
$\frac{1}{100}$ inch

Fig. 6.



$\frac{1}{100}$ inch

Fig. 8.



$\frac{1}{100}$ inch

PLATE LI.

FIG.

1. *MUCRONELLA PEACHII*, var. α (LABIOSA), p. 361.
2. ———, var. β (OCTODENTATA), p. 361.
- 3-6. *MUCRONELLA VARIOLOSA*, p. 366 ; vars.
7. ———, showing the growth of the superficial crust.
8. *MUCRONELLA LAQUEATA*, p. 368.

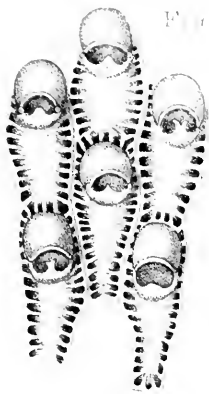


Fig. 1



Fig. 5

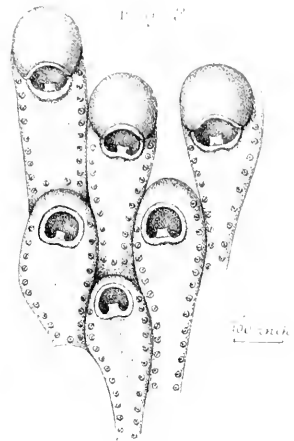


Fig. 2

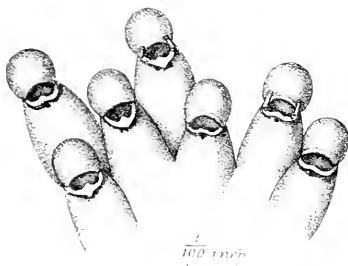


Fig. 3

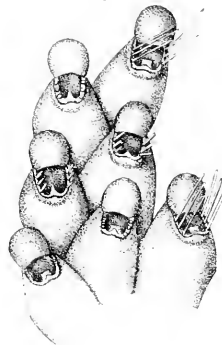


Fig. 6

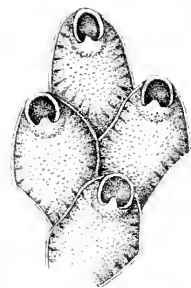


Fig. 8

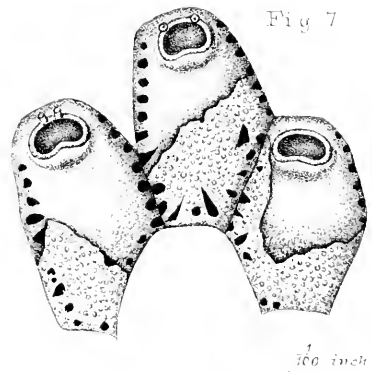
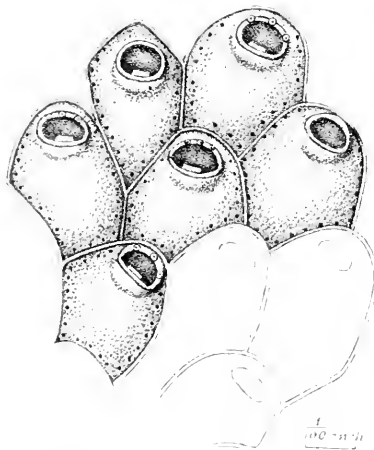


Fig. 7

PLATE LII.

FIG.

1. PALMICELLARIA SKENEI, p. 379 ; var. β (FOLIACEA),
about nat. size ; from a beautiful specimen in the
possession of Dr. McIntosh.
2. ——— ———, usual form, nat. size.
3. ——— ———, zoëcia.
- 3 a. ——— ———, zoëcium, showing position of the avicula-
rium.
4. ——— ———, form BICORNIS.
- 5, 6. PALMICELLARIA LOREA, p. 382 ; nat. size, and zoëcia
magnified.
7. CELLEPORA RAMULOSA, p. 401; slightly above nat. size.
8. ——— ———, zoëcia.
9. ——— ———, a single cell, showing the spur at the
base of the rostrum.

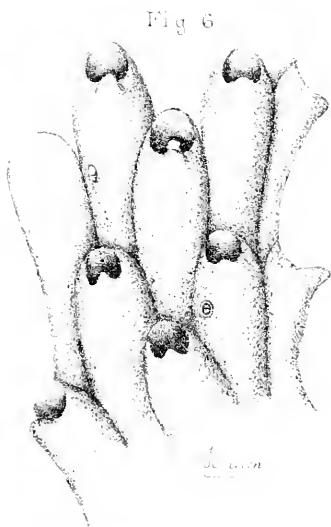
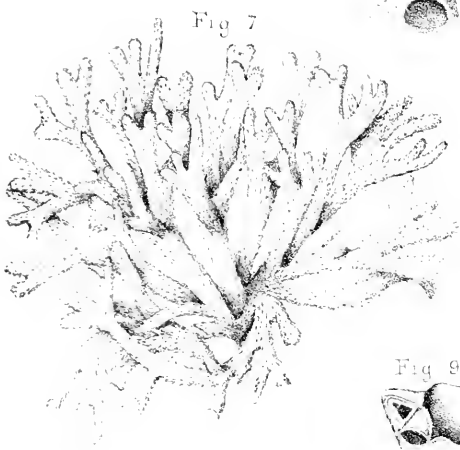


PLATE LIII.

FIG.

1-3. RETEPORA BEANIANA, p. 391; nat. size.

4. ———, zoœcia.

5. ———, dorsal surface.

6, 7. RETEPORA COUCHII, p. 395; nat. size.

8, 10. ———, zoœcia.

9. ———, dorsal surface.

11. ———, elongate avicularium.



Fig. 2

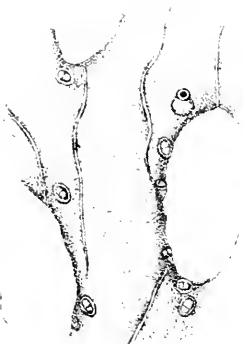


Fig. 5

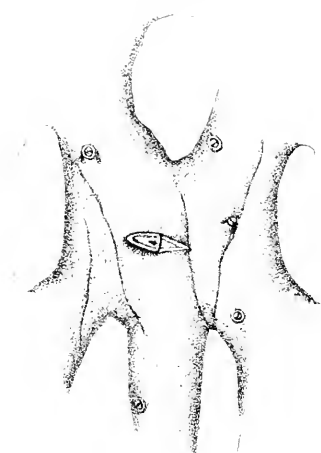


Fig. 6

$\frac{1}{100}$ inch

$\frac{1}{100}$ inch

Fig. 4



Fig. 7

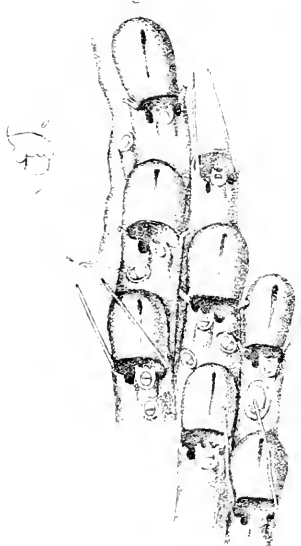


Fig. 10

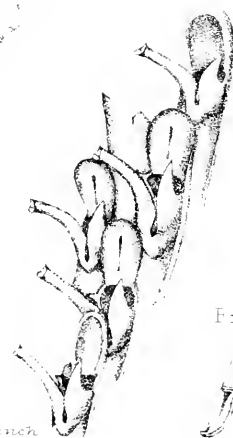


Fig. 11

$\frac{1}{100}$ inch

PLATE LIV.

FIG.

1. *CELLEPORA FUMICOSA*, p. 398 ; zoœcia from the margin of the colony.
- 1*a*, 1*b*. — — —, adult zoœcia, showing the form of the rostrum.
2. — — —, zoœcium with punctured ovicell.
3. — — —, nat. size ; nodulated form on shell, ovoid on stem.
- 3*a*. — — —, ditto, on stone.
- 4, 5. *CELLEPORA AVICULARIS*, p. 406.
6. — — —, large conical avicularium.
- 7-9. *CELLEPORA TUBIGERA*, p. 409 ; from Crag specimens, after Busk.
- 10, 11. *CELLEPORA ARMATA*, p. 410.
12. — — —, rostrum.
13. — — —, spatulate avicularium.

Fig. 3



Fig. 1



100 microns

Fig. 2



Fig. 11

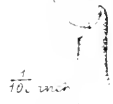


50 microns

Fig. 57



Fig. 12

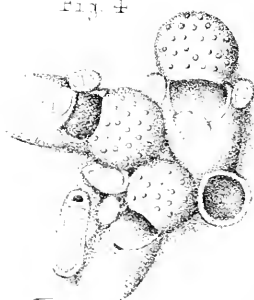


100 microns

Fig. 13



Fig. 4



100 microns

Fig. 15



Fig. 5



100 microns

Fig. 17



Fig. 6



Fig. 7



Fig. 9



PLATE LV.

FIG.

1. *CELLEPORA DICHOTOMA*, p. 403; adult zoëcia.
2. ———, younger cells from the margin of the colony.
- 3-6. ———, nat. size, showing the varieties of habit.
7. ———, var. *ATTENUATA*, rather young cells.
8. ———, single cell and spatulate avicularium.
9. ———, section of the stem.
10. ———, nat. size.
- 11, 12, 14. *CELLEPORA COSTAZII*, p. 411; normal form.
13. ———, var. *a* (*TUBULOSA*).

Fig. 1

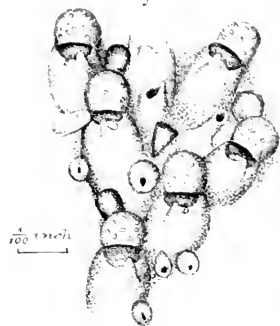


Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 8.



Fig. 13

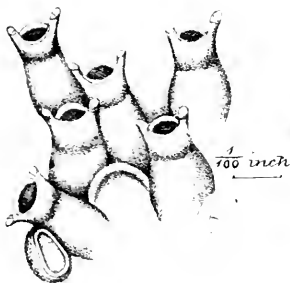


Fig. 7

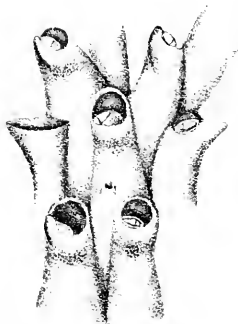


Fig. 9.

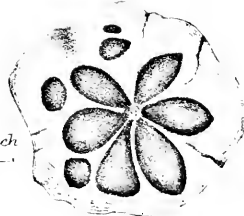


Fig. 10

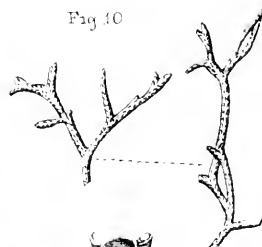


Fig. 12

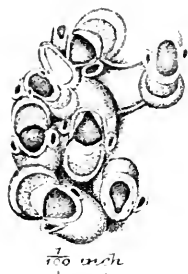


Fig. 11.

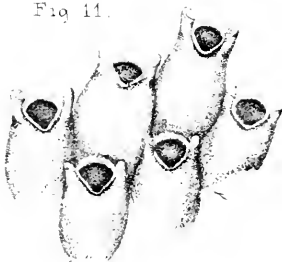


Fig. 14



PLATE LVI.

FIG.

1. CRISIA CORNUTA, p. 419.
2. ——— ———.
3. ——— ———.
4. ——— ———, var. GENICULATA. After Milne-Edwards.
5. CRISIA EBURNEA, var. ACULEATA, p. 420.
6. ——— ———, nat. size.
7. CRISIA DENTICULATA, p. 422.
- 7 a. ——— ———, nat. size.
8. ——— ———, one of the radical fibres.
9. ——— ———, variety.



PLATE LVII.

FIG.

1, 1 *a*. STOMATOPORA GRANULATA, p. 425; enlarged and
nat. size.

2. ——— ———, older state.

3. STOMATOPORA DILATANS, p. 429.

3 *a*. ——— ———, nat. size.

4. STOMATOPORA DEFLEXA, p. 437.

5. STOMATOPORA FUNGIA, p. 438.

6. ——— ———, the capitulum.

Fig. 1

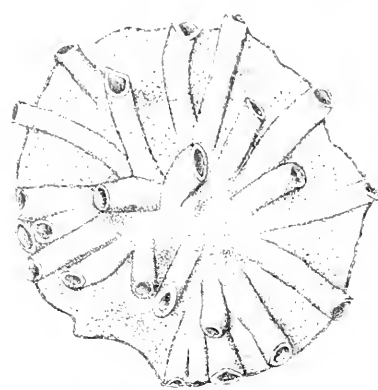
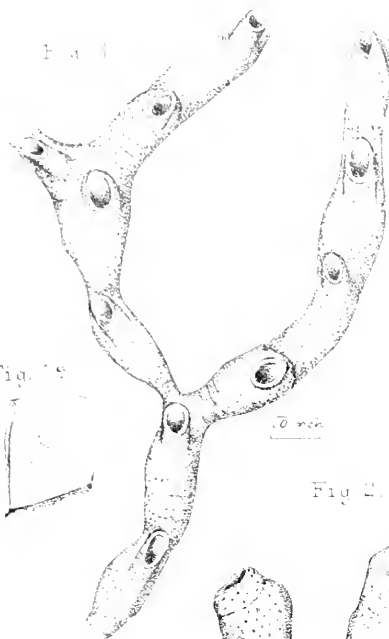


Fig. 2

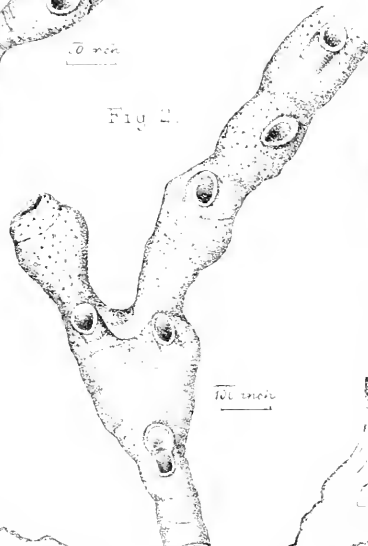


Fig. 4

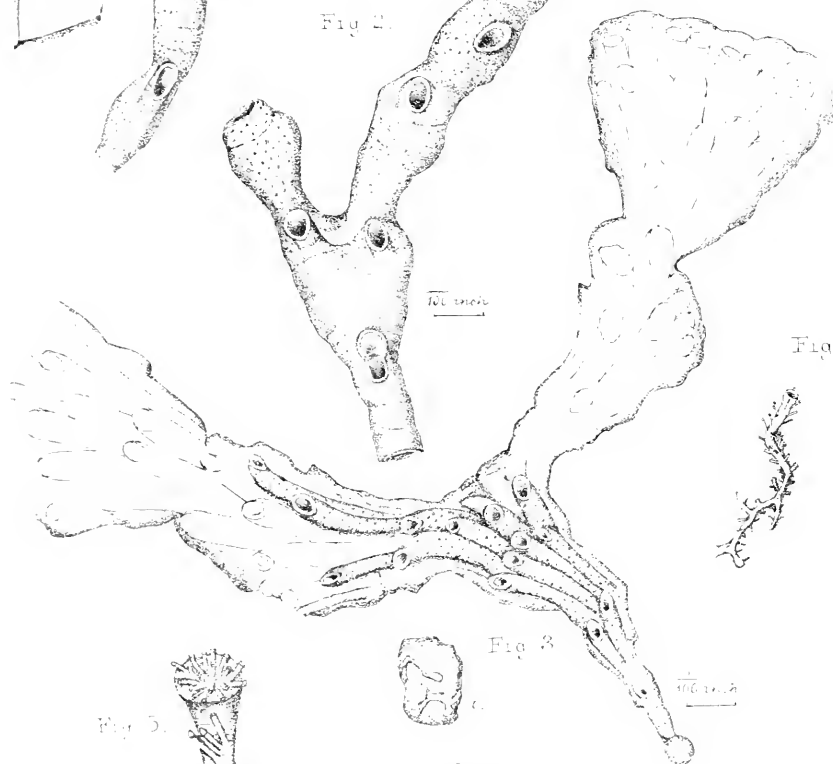


Fig. 3



Fig. 5



PLATE LVIII.

FIG.

1. STOMATOPORA MAJOR, p. 427 ; with oœcium and triple division of the branch. See Plate LXI.
2. ——— ———, nat. size of the above.
3. ——— ———.
- 3 *a.* ——— ———, nat. size.
4. ——— ———, nat. size, from a finely ramified specimen.

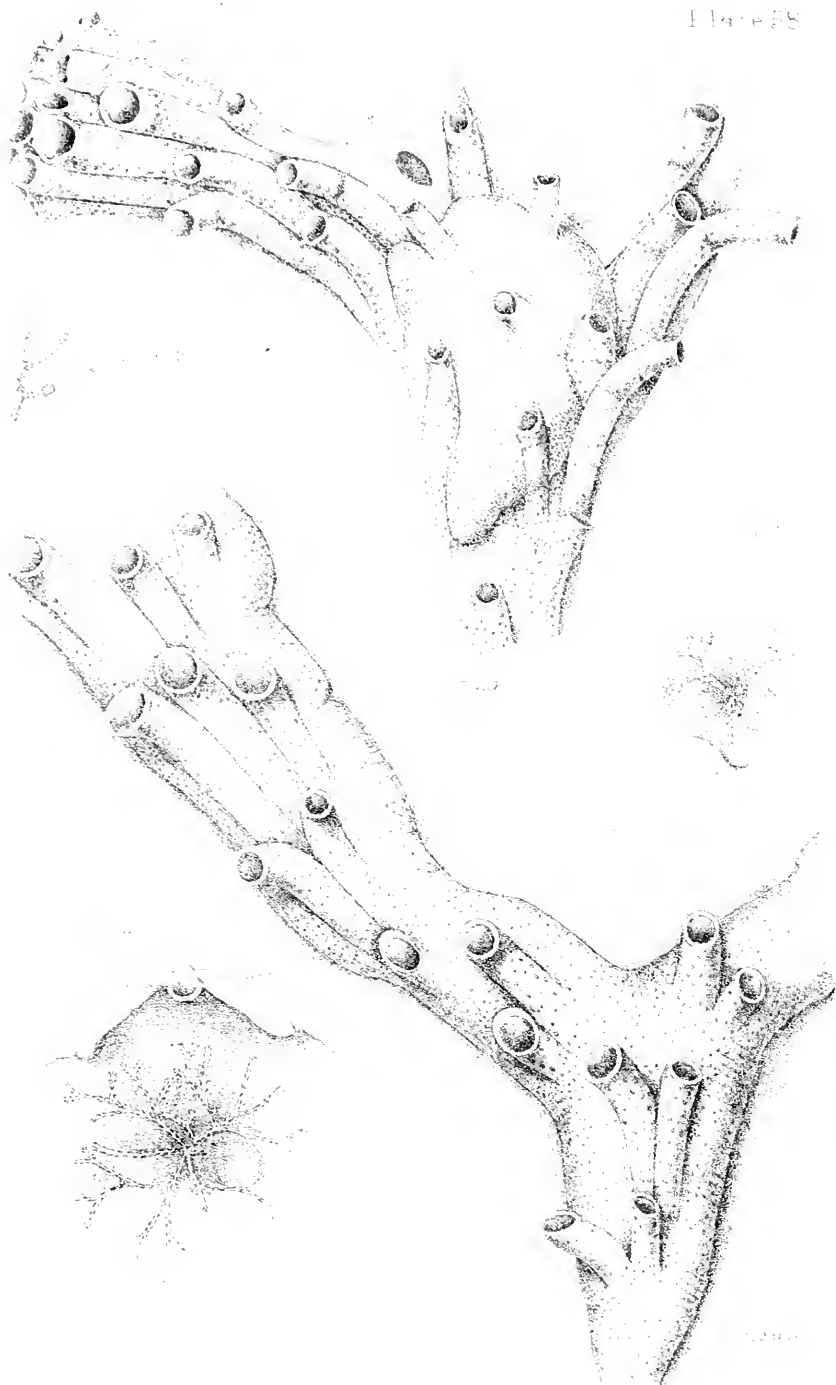


PLATE LIN.

FIG.

1. STOMATOPORA JOHNSTONI, p. 430. See Plate LX.
2. STOMATOPORA INCRASSATA, p. 436.
3. ———, nat. size.
4. STOMATOPORA FASCICULATA, p. 441 ; a colony, enlarged.
5. ———, nat. size.

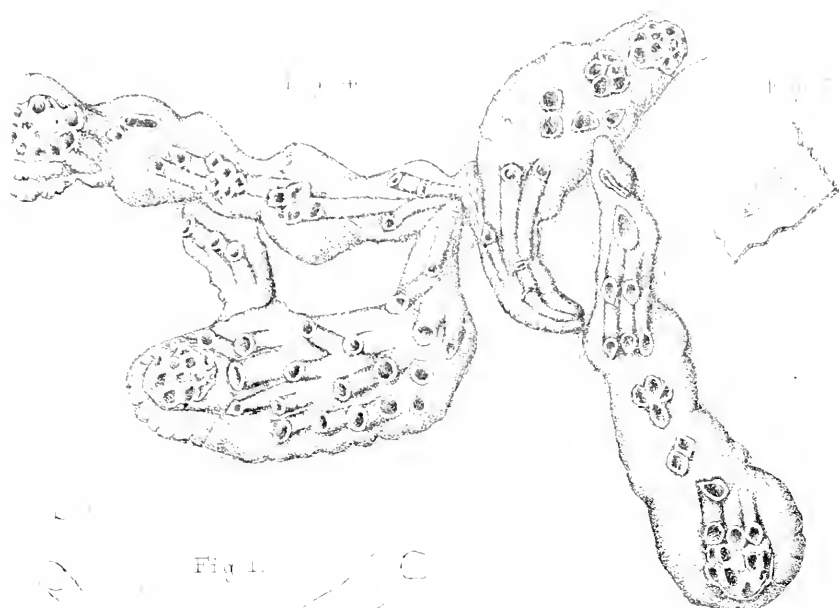


Fig. 1.

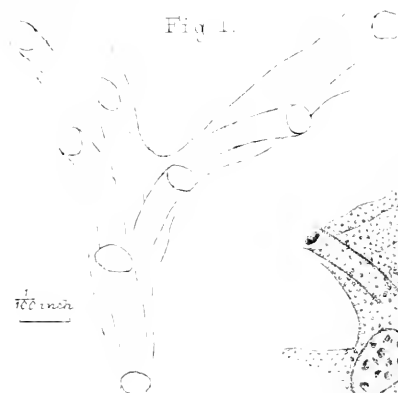


Fig. 2.

$\frac{1}{100}$ inch



Fig. 3.

PLATE LX.

FIG.

1. STOMATOPORA JOHNSTONI, p. 430; with oöcia.
See Plate LIX.

1 *a.* ——— ———, nat. size.

2. IDMONEA SERPENS, p. 453; young. See Plate LXI.

3. TUBULIPORA FIMBRIA, p. 448.

3 *a.* ——— ———, nat. size.

Fig 1

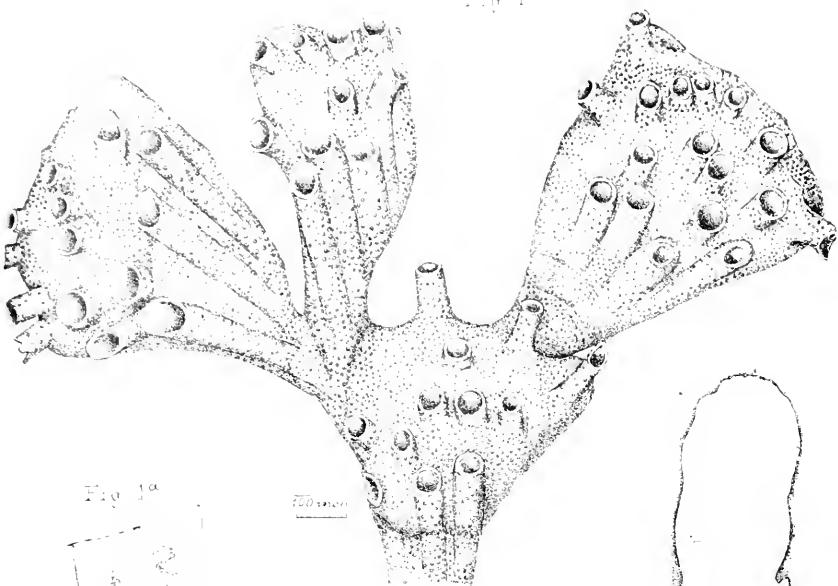


Fig 1a



Fig 2



Fig 3

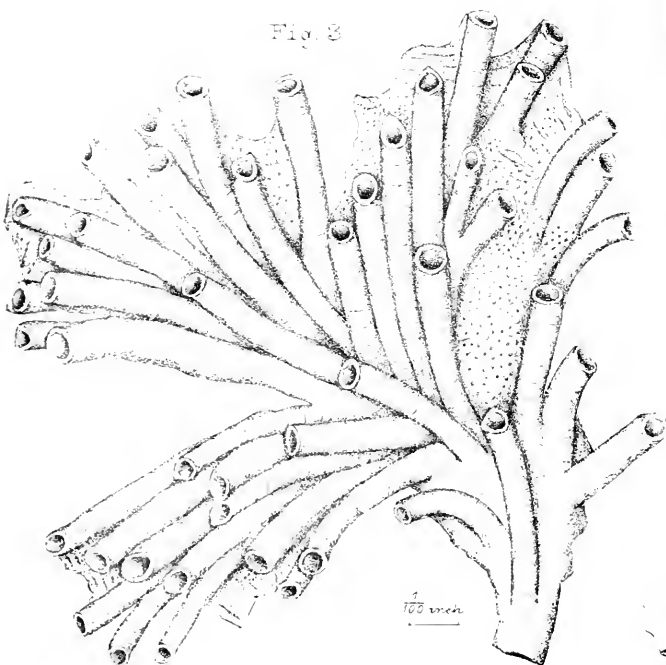


Fig 3a



PLATE LXI.

FIG.

1. STOMATOPORA MAJOR, p. 427. See Plate LVIII.
2. IDMONEA SERPENS, p. 453; zoöcia.
3. ———, var. RADIATA, nat. size.
4. TUBULIPORA LOBULATA, p. 444; a single lobe.
- 4 *a*, 4 *b*. ———, nat. size.
5. ———, from another specimen.
- 5 *a*. ———, nat. size.

Fig. 1

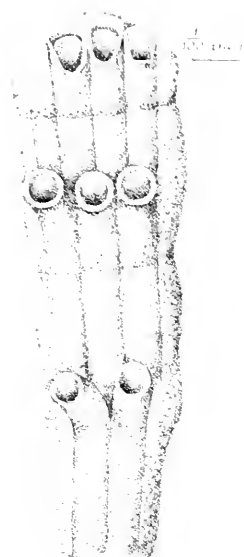


Fig. 4b



Fig. 4

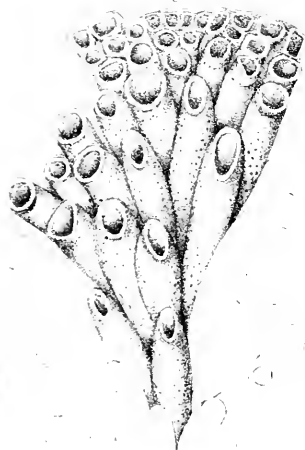


Fig. 5C

Fig. 5

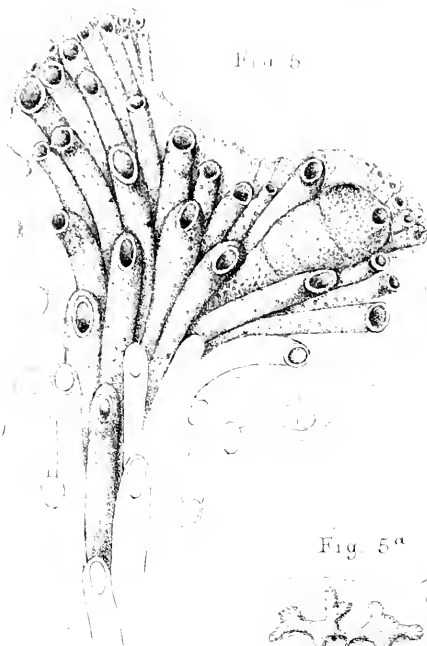


Fig. 5a



Fig. 2

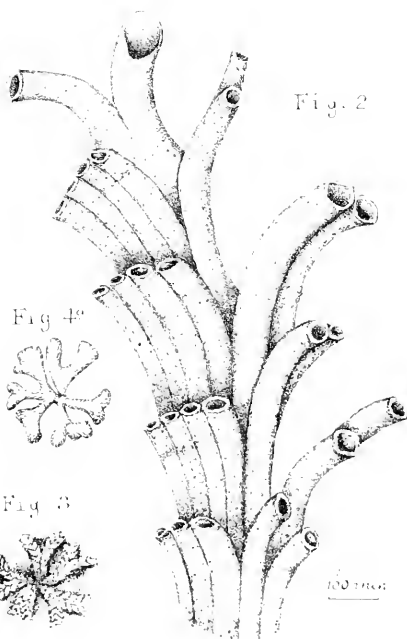


Fig. 4a



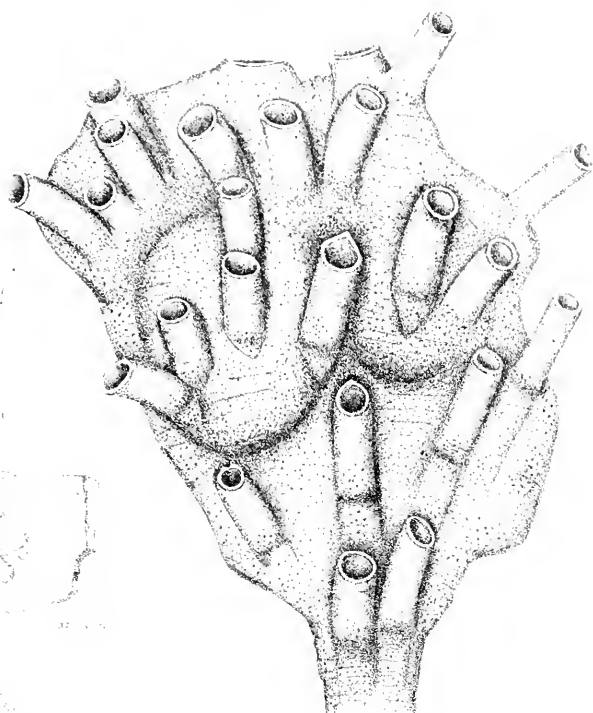
Fig. 3



PLATE LXII.

FIG.

1. STOMATOPORA EXPANSA, p. 432 ; a lobe, enlarged.
1 *a.* ——— ———, nat. size.
2. HORNERA VIOLACEA, p. 469 ; dorsal surface.
See Plate LXVII.
3. ——— ———, occipium.



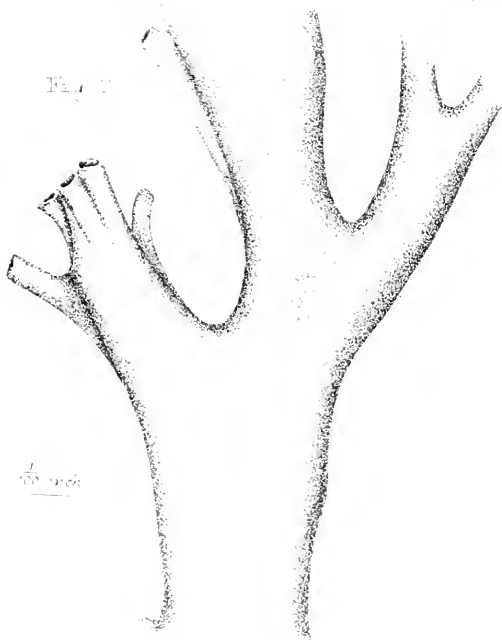
$\frac{1}{100}$ inch

Fig. 1.



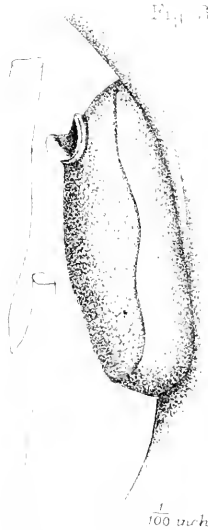
$\frac{1}{100}$ inch

Fig. 2.



$\frac{1}{100}$ inch

Fig. 3.



$\frac{1}{100}$ inch

SECRET

PLATE LXIII.

FIG.

- 1, 2. STOMATOPORA COMPACTA, p. 135; enlarged and nat. size.
- 3, 4. STOMATOPORA DIASTOPORIDES, p. 134; enlarged and nat. size.
5. DOMOPORA TRUNCATA, p. 185; colony with a single bud.
6. ———, colony viewed from above.
7. ———, a composite colony.
8. ———, the elevated centre *.
9. ———, portion of the margin of the disk.
10. DOMOPORA STELLATA, p. 181; a finely developed colony, with numerous capitula, considerably above nat. size.
11. ———, the branched form.
12. ———, a young bilobate colony.
13. ———, var. (? = *Corymbopora fungiformis*, Smitt).
14. ———, celliferous lamellæ.

* In this figure the radiating furrows are too strongly marked.

Fig. 8

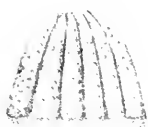


Fig. 2



Fig. 1

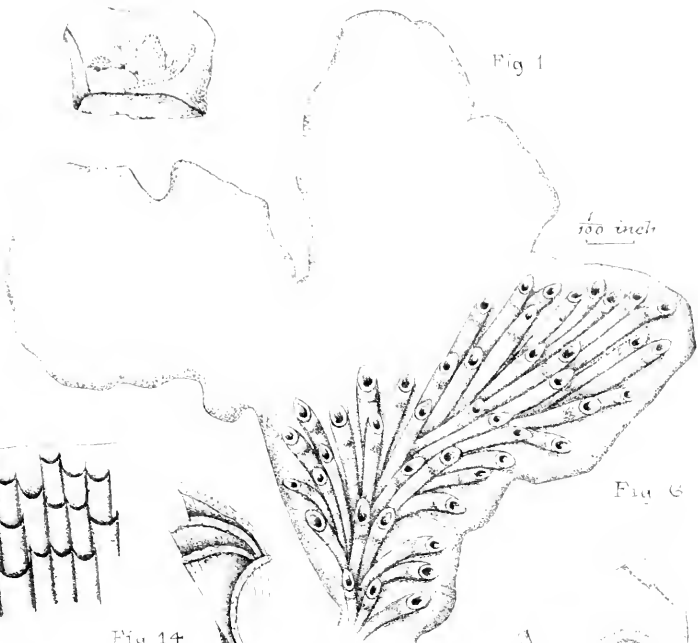


Fig. 7



Fig. 9

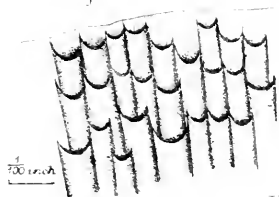


Fig. 14



Fig. 6



Fig. 5



Fig. 13



Fig. 3



Fig. 11



Fig. 10

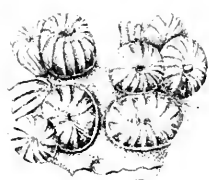


Fig. 4



Fig. 12



1/100 inch

PLATE LXIV.

FIG.

1. *TUBULIPORA FLABELLARIS*, p. 416; a colony in the earlier, flabellate stage.
2. ———, a very young colony, showing the primitive disk.
3. ———, nat. size, a fully developed colony.
4. *LICHENOPORA VERRUCARIA*, p. 478; a segment of the disk.
- 4a. ———, single cell, showing the acuminate margin.
5. ———, nat. size.
6. *STOMATOPORA INCURVATA*, p. 433; nat. size.
7. ———, portion of the zoarium, enlarged.
8. ———, side view of the zoœcia, showing the orifices.

Fig. 1.



Fig. 3.



Fig. 2.

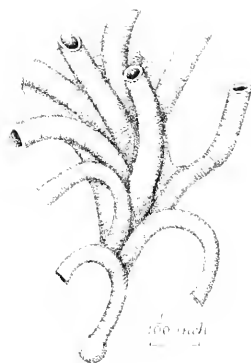


Fig. 7.



Fig. 6.



Fig. 4.



Fig. 8.



Fig. 4°



Fig. 5.



PLATE LXV.

FIG.

- 1, 2. *IDMONEA ATLANTICA*, p. 451 ; portion of a branch,
front surface.
3. ——— ———, nat. size.
4. ——— ———, dorsal surface.
- 5, 6. *ENTALOPHORA CLAVATA*, p. 456 ; terminal portion of
a branch.
7. ——— ———, cellular apex of the branch.
8. ——— ———, nat. size.

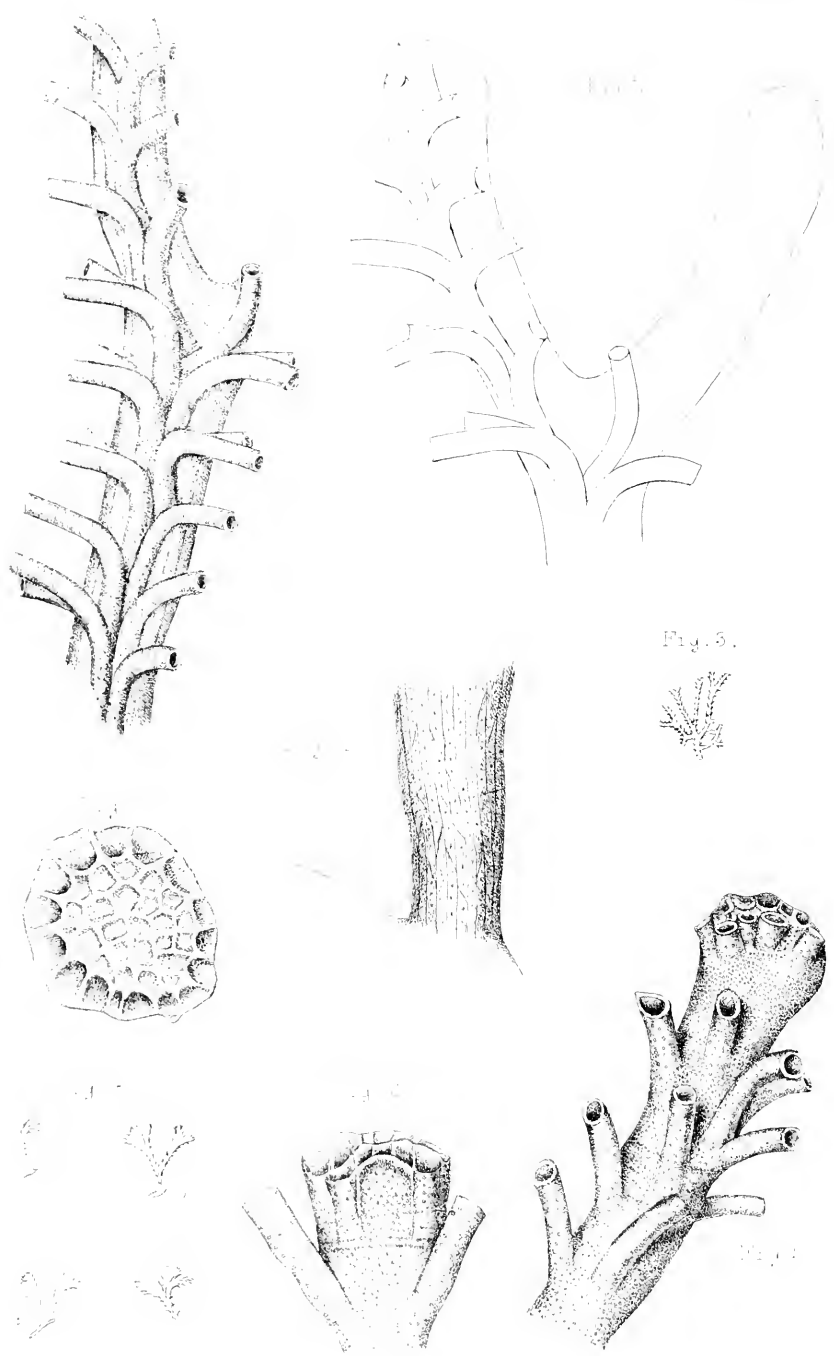


PLATE LXVI.

FIG.

1. *DIASTOPORA PATINA*, p. 458; zoëcia.
2. ———, a young colony.
3. ———, ordinary caliculate form.
4. ———, proliferous disk.
5. ———, disk with the lamina wholly adnate.
6. ———, stipitate form.
- 7, 8. *DIASTOPORA SARNIENSIS*, p. 463; portions of the crust, showing several of the operculate cells, with tubular orifice.
9. ———, nat. size.
- 10, 10 *a.* *DIASTOPORA OBELIA*, p. 462; portion of the crust, enlarged, and colony, of the natural size.
- 11, 11 *a.* *DIASTOPORA SUBORBICULARIS*, p. 464; ditto, ditto.

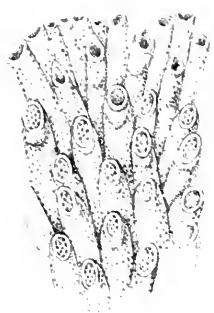


Fig. 1



Fig. 2



Fig. 3



Fig. 4

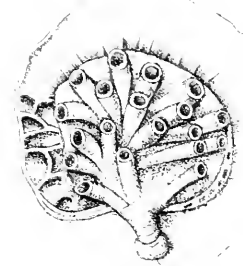


Fig. 5



Fig. 6



Fig. 7



Fig. 8

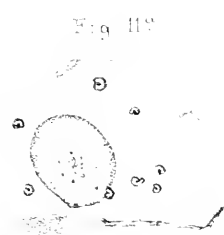


Fig. 9

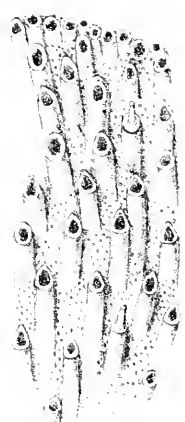


Fig. 10

Fig. 10

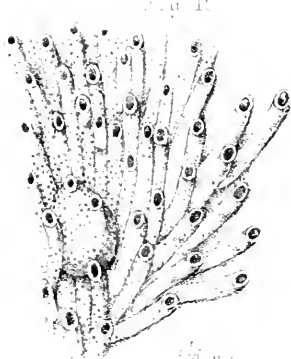


Fig. 11



Fig. 12

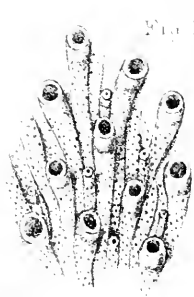


Fig. 13

PLATE LXVII.

FIG.

1. *HORNERA LICHENOIDES*, p. 168; portion of branch, enlarged.
2. ——— ———, dorsal surface.
3. ——— ———, oecium.
- 4, 5. ——— ———, nat. size.
6. *HORNERA VIOLACEA*, p. 469; portion of branch, enlarged. See Plate LXII.
7. ——— ———, dorsal surface.
8. ——— ———, nat. size.



PLATE LXVIII.

FIG.

1. *LICHENOPORA HISPIDA*, p. 473; a young and simple colony, with one of the oöcial orifices in the centre.
2. ———, portion of disk.
3. ———, one of the mamillæ of the composite form.
4. ———, a composite colony in an early stage, showing the mode of gemmation: nat. size.
5. ———, adult composite colony, var. β , nat. size.
6. ———, caliculate form, nat. size.
7. ———, portion of disk, showing the stellate pores.
8. ———, origin of colony.
9. *LICHENOPORA RADIATA*, p. 476; enlarged and nat. size. After Tuffen West.
10. ———, one of the oöcial orifices.
11. *LICHENOPORA REGULARIS*, p. 479; enlarged (about three times) and nat. size.

PLATE LXIX.

FIG.

1. *ALCYONIDIUM GELATINOSUM*, p. 491 ; lobate form, nat. size.
2. ———, young and simple colony, nat. size.
3. ———, portion of surface, showing zoæcial orifices.
4. *ALCYONIDIUM PARASITICUM*, p. 502 ; specimen investing a Sertularian.
5. ———, portion of crust as it appears when dried.
6. ———, a lobe, showing the arrangement of the cells.
7. *ALCYONIDIUM MAMILLATUM*, p. 495 ; nat. size.
8. ———, zoæcia, enlarged.
9. *ALCYONIDIUM POLYOM*, p. 501. After Hassall.

Fig. 3

Fig. 8

Fig. 1.

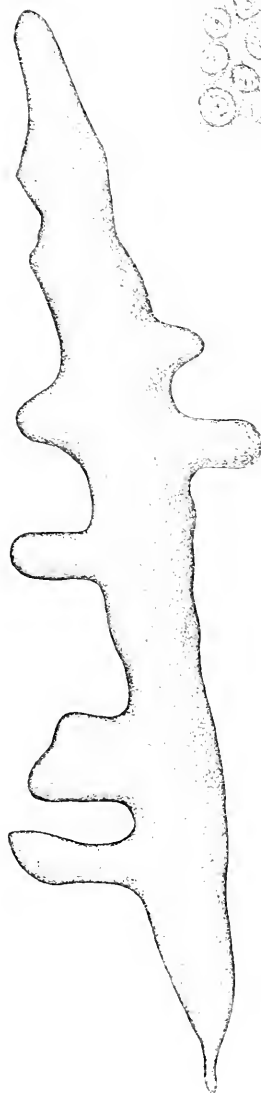


Fig. 7.

Fig. 5.



Fig. 6.

Fig. 9.

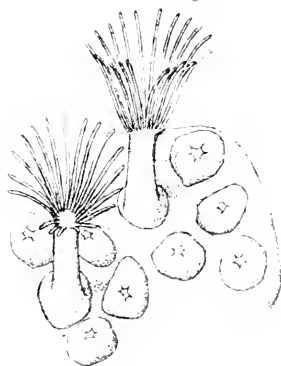


Fig. 4.

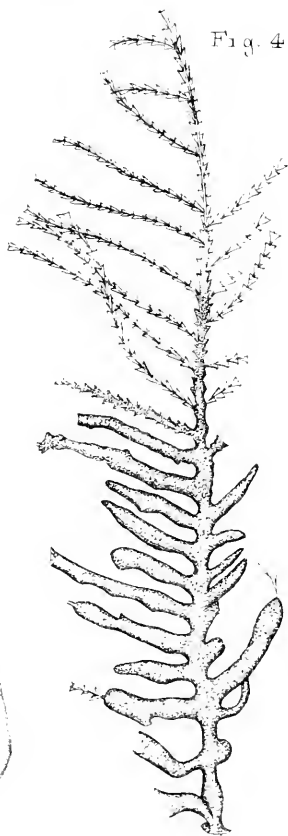


PLATE LXX.

FIG.

1. *ALCYONIDIUM DISJUNCTUM*, p. 497 ; portion of the crust, enlarged.
- 2, 3. *ALCYONIDIUM MYTILI*, p. 498 ; zoëcia.
4. *ALCYONIDIUM HIRSUTUM*, p. 493 ; young colony, nat. size.
5. — — —, portion of surface, viewed from above, showing the zoëcial orifices surrounded by the papillæ.
6. — — —, papillæ, viewed in profile.
7. — — —, the polypide.
- 8, 9. *ALCYONIDIUM ALBIDUM*, p. 500 ; portions of crust.
10. — — —, two zoëcia detached.
- 11, 12. — — —, polypides.

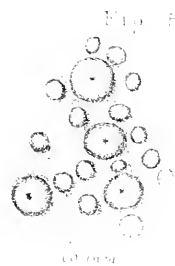
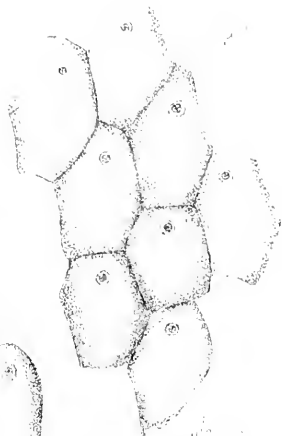


PLATE LXXI.

FIG.

1, 2. ARACHNIDIUM HIPPOTHOODES, p. 509.

3, 4. ARACHNIDIUM CLAVATUM, p. 510.

5. ——— ———, a single zoëcium.

6, 7. ARACHNIDIUM FIBROSUM, p. 511.



Fig. 1.

Fig. 3.

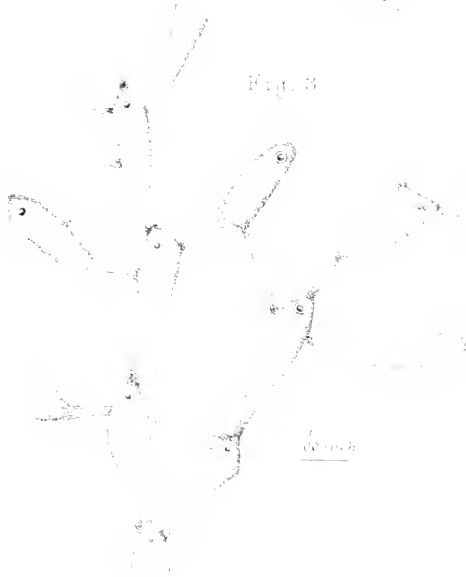


Fig. 4.



Fig. 5.



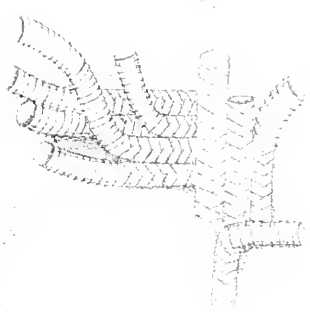
Fig. 7.



PLATE LXXII.

FIG.

1. FLUSTRELLA HISPIDA, p. 506; young zoëcia.
2. ———, zoëcia with the spines developed around the orifice only.
3. ———, a zoëcium surrounded by spines. After Smitt.
4. ———, the bilabiate orifice with the polypide issuing.
5. ———, the expanded tentacular bell.
6. BUSKIA NITENS, p. 532; colony creeping over a stem.
7. ———, a single cell.
- 7 a. ———, the retractile sheath unrolled, with operculum of setæ.
8. RHABDOPLEURA COMPACTA, p. 581.
- 8 a. ———, nat. size.
9. ———, portion of the "axial cord," with statoblasts (?), seen from below.



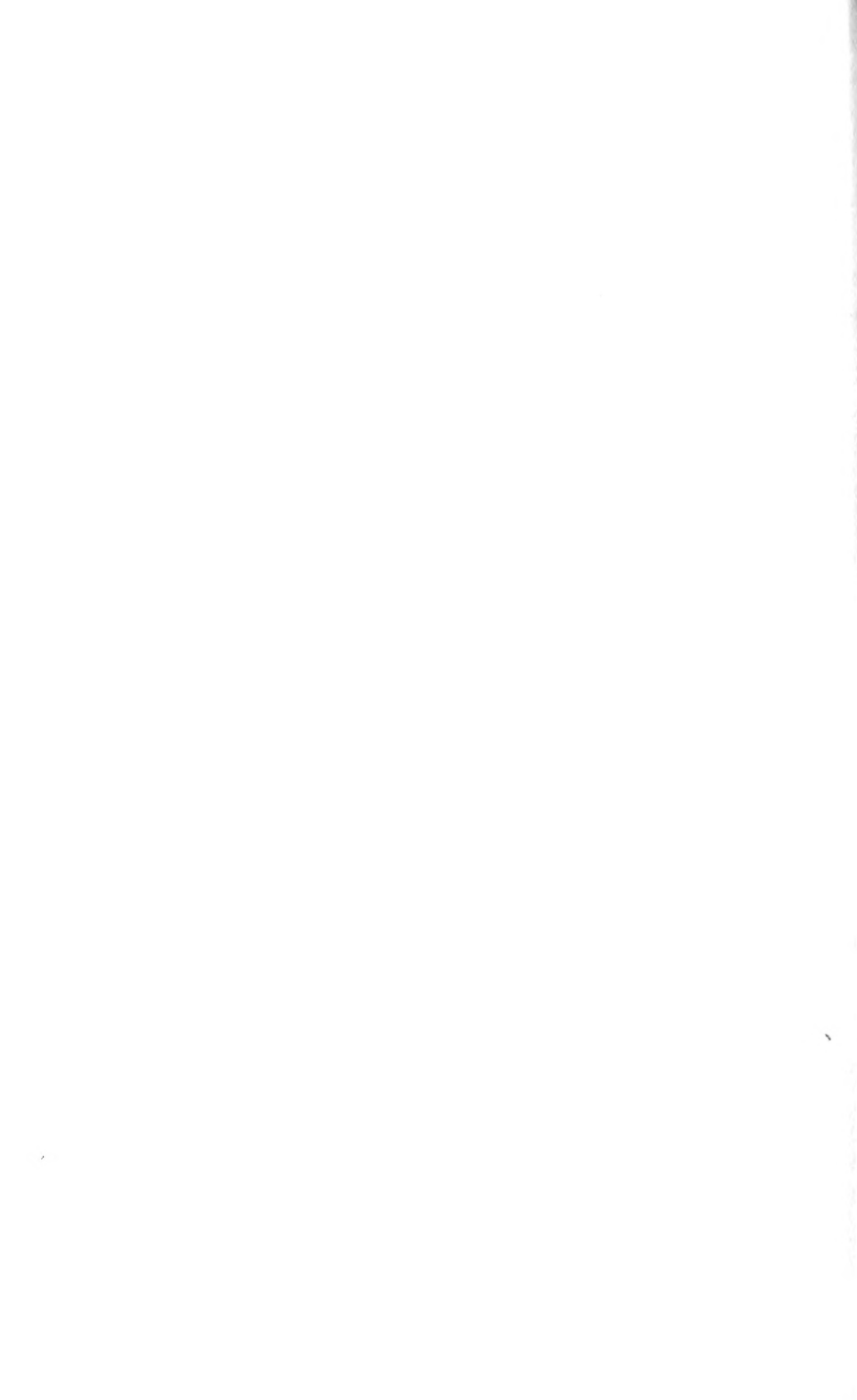


PLATE LXXIII.

FIG.

1. BOWERBANKIA IMBRICATA, p. 519; erect form.
2. ———, nat. size.
3. VESICULARIA SPINOSA, p. 513; nat. size.
4. ———, a fully developed branch, with the spinous extremities.
- 5, 6. ———, growing branches, with blunt extremities.
7. ———, a young shoot, showing the endosarc and the mode in which the zoœcia are connected with it.

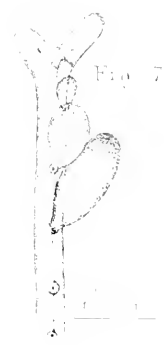


PLATE LXXIV.

FIG.

1. *MIMOSELLA GRACILIS*, p. 556 ; nat. size.
2. ———, portion of a pinna, showing the double line of cells ; a single zoëcium thrown back.
3. ———, stem, showing the internodes and the tubular projections to which the cells are jointed.
4. ———, terminal portion of a pinna, with buds in various stages.
- 5, 6. ———, zoëcia, showing the mode of attachment.
7. *AMATHIA LENDIGERA*, p. 516 ; nat. size.
8. ———, one of the sets of cells, with the polypides expanded.
9. ———, portion of zoarium.
10. ———, extremity of branch, with cells budding.

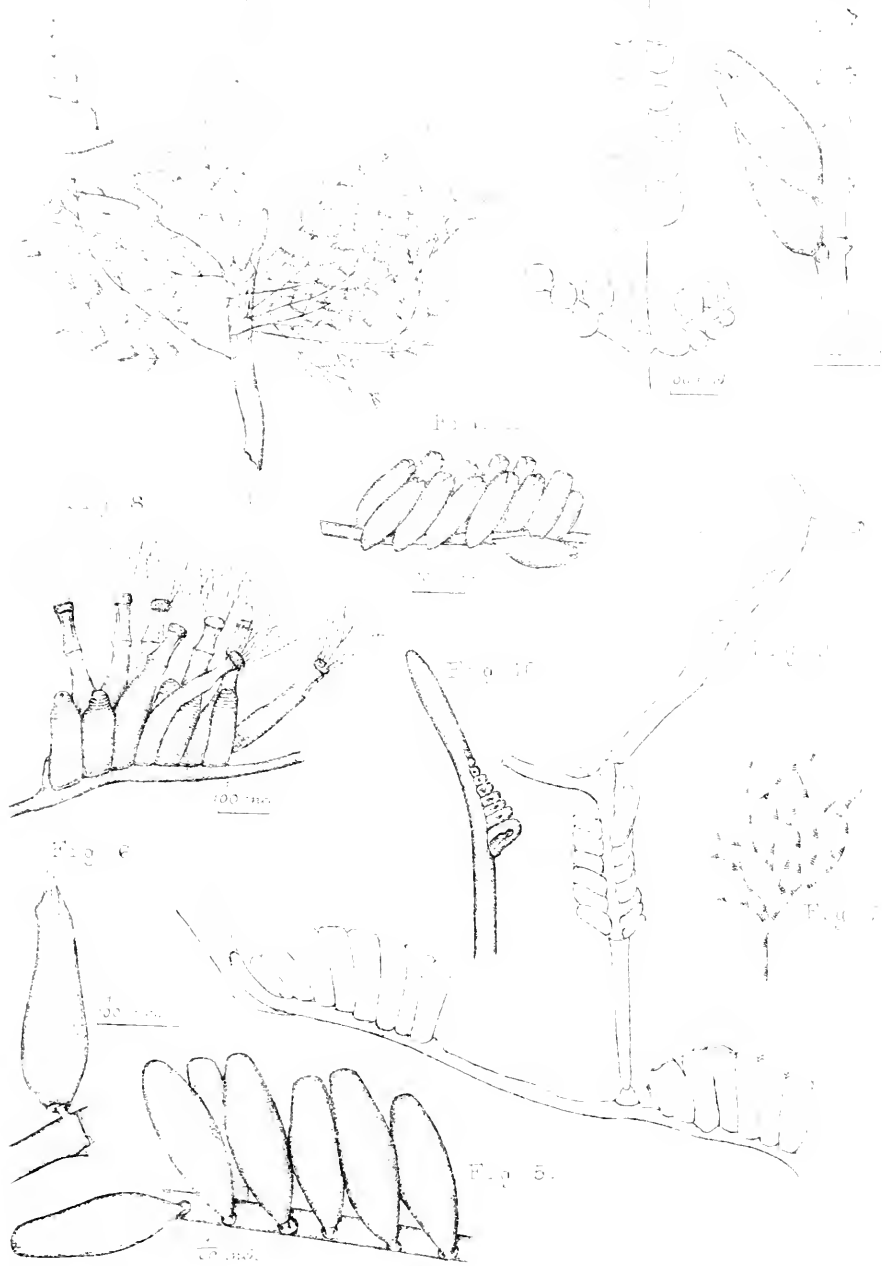


PLATE LXXV.

FIG.

- 1-4. VALKERIA UVA, erect form (CUSCUTA), p. 551.
5. ———, repent form, on *Corallina*.
6. BOWERBANKIA GRACILLIMA, p. 525.
7. BOWERBANKIA CAUDATA, p. 521; showing the biserial arrangement of the zoöcia and the caudate extremity.
8. ———.

1. 1. 1.

2. 2. 2.

3. 3. 3.

4. 4. 4.

5. 5. 5.

6. 6. 6.

7. 7. 7.

8. 8. 8.

9. 9. 9.

10. 10. 10.

11. 11. 11.

12. 12. 12.

13. 13. 13.

14. 14. 14.

15. 15. 15.

16. 16. 16.

17. 17. 17.

18. 18. 18.

19. 19. 19.

PLATE LXXVI.

FIG.

1. BOWERBANKIA PUSTULOSA, p. 522 : nat. size.
2. ———, group of cells, with polypides expanded.
- 3-5. ———, zoœcia, showing the subspiral arrangement.
6. BOWERBANKIA CITRINA, p. 524 ; nat. size.
7. ———, group of cells, with polypides expanded.
8. ———, ditto, showing its comparatively small size.

Fig 7.



Fig 6.



Fig 8.

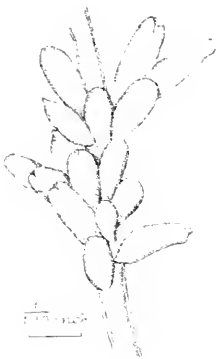


Fig 3.



Fig 4.



Fig 1.



Fig 5.



Fig 2.



PLATE LXXVII.

FIG.

- 1, 2. *CYLINDRÆCIUM DILATATUM*, p. 536. See
Plate LXXIX.
- 3, 3 *a*. *CYLINDRÆCIUM GIGANTEUM*, p. 535.
4. ———, showing the ova collected at the top of
the zoëcium previous to escape.
- 5, 5 *a*. *ANGUINELLA PALMATA*, p. 539.
6. *AVENELLA FUSCA*, p. 527. After Dalycell.
7. ———. After Wyville Thomson.

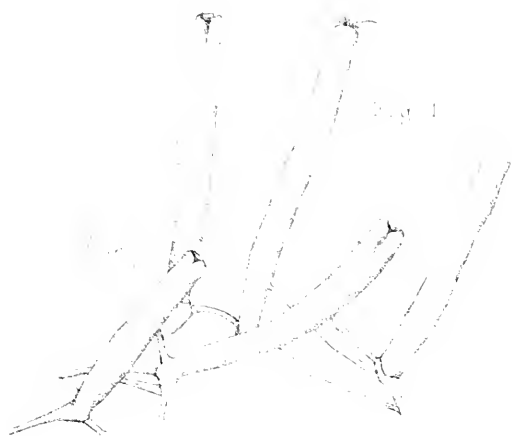


Fig. 1

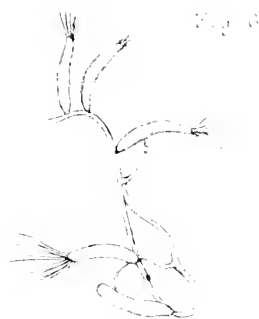


Fig. 6



Fig. 7

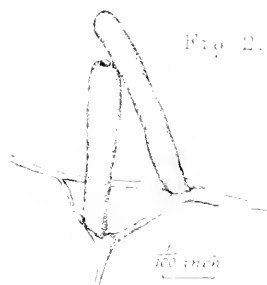


Fig. 2.

100 inch

Fig. 4



Fig. 3



Fig. 3

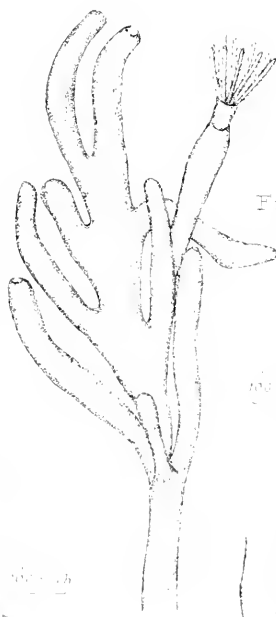


Fig. 5

100 inch



Fig. 8



PLATE LXXVIII.

FIG.

1. HIPPURARIA EGERTONI, p. 549; portion of the erect stem, with whorls of cells.
2. — — —, a zoëcium, much enlarged, showing the ventral aperture.
3. — — —, showing the degree in which the cell can be bent. After a sketch by Sir P. Egerton.
4. — — —, nat. size *.
5. FARRELLA REPENS, p. 529. After Van Beneden.
6. — — —, form ELONGATA. Ditto.

* Figs. 1, 2, and 4 are after Busk

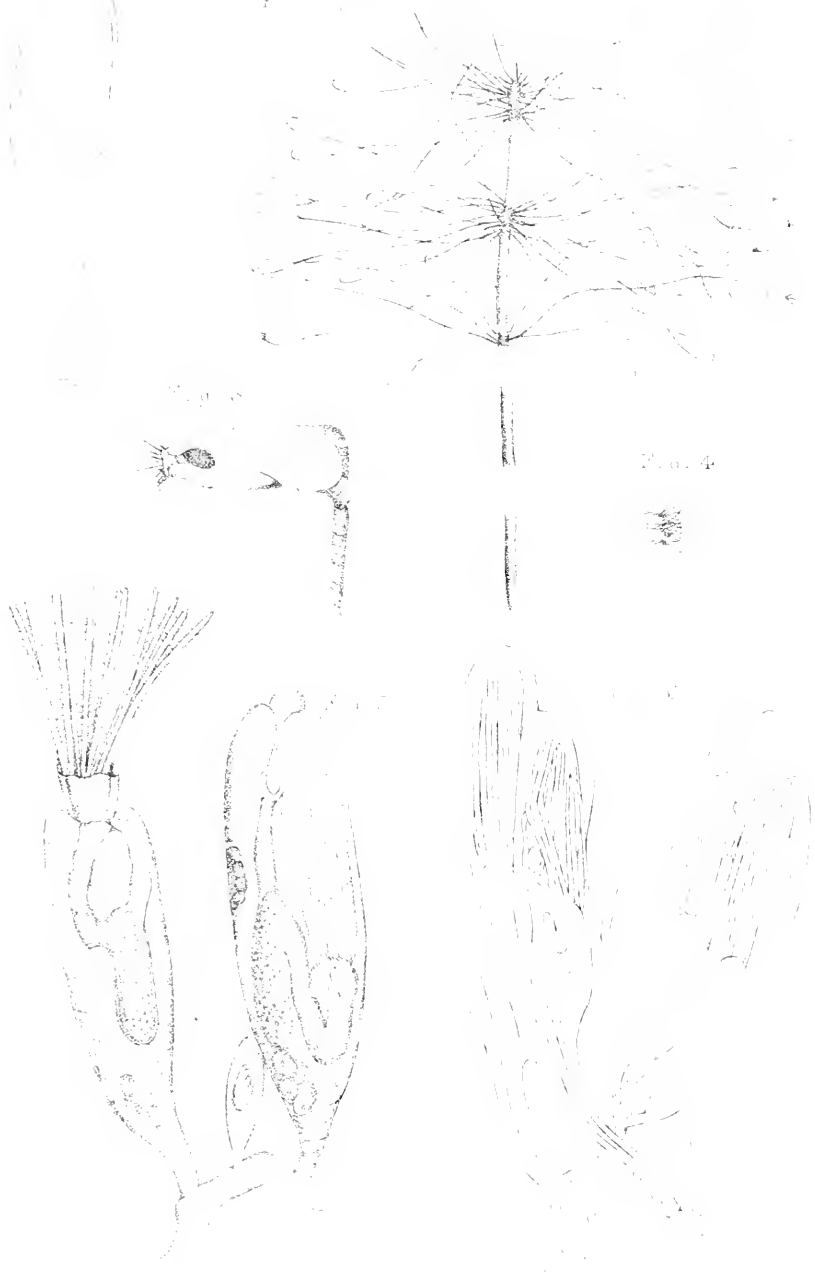


PLATE LXXIX.

FIG.

- 1-3. *CYLINDRÆCIUM DILATATUM*, p. 536 ; from specimens developed on shell, with a large spinous dilatation at the base of the zoëcium.
- 4, 5. *VICTORELLA PAVIDA*, p. 561 ; showing the expanded and decumbent base of the cell, and the Campylonemidan arrangement of the tentacles.
6. ——— ———, the tentacular wreath.
7. ——— ———, a zoëcium in an early stage of development, the polypide forming within the decumbent portion.

Fig. 2



Fig. 5.



Fig 4

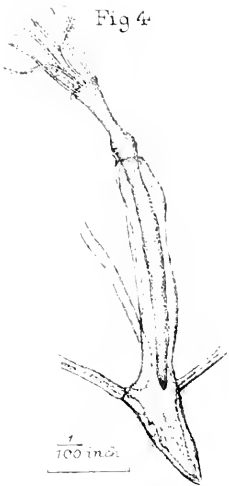


Fig 3.



Fig. 6.



Fig. 1.

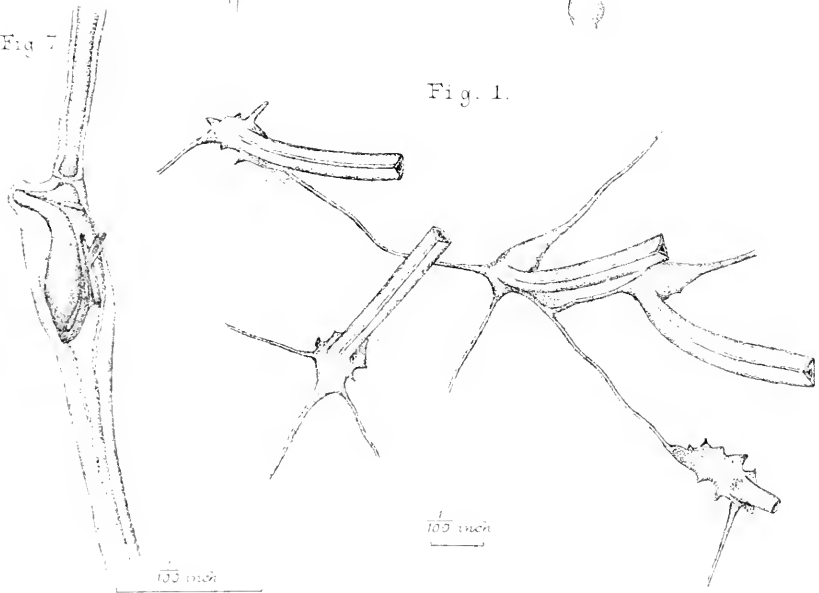


Fig 7



PLATE LXXX.

FIG.

1, 1 *a*. VALKERIA TREMULA, p. 554.

2. ———, polypide expanded, and cells showing the setose operculum.

3. TRITICELLA PEDICELLATA, p. 547.

4. ———, zoëcium, showing the ventral side and the aperture.

5. ———, zoëcium, with polypide expanded. After Alder.

6. TRITICELLA KORENII, p. 545. After G. O. Sars. See Plate XLV. figs. 8-10.

7. TRITICELLA FLAVA, p. 543. After Dalyell.

8. CYLINDRÆCIUM PUSILLUM, p. 537*.

9. ? CYLINDRÆCIUM PUSILLUM, dwarf var., p. 538 ; or possibly a distinct species.

* This figure is defective in not showing the expansion at the base of the zoëcia. See woodcut, p. 538.

Fig. 2



Fig. 1



Fig. 5



Fig. 1a



Fig. 4



Fig. 3.



Fig. 6



Fig. 9



Fig. 8

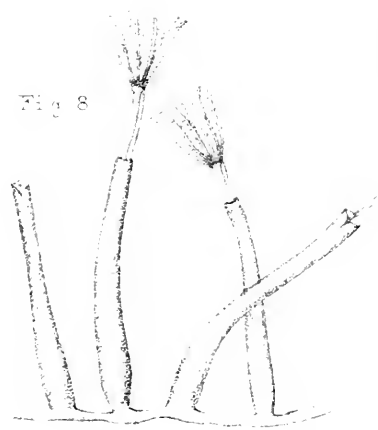


Fig. 7.





PLATE LXXXI.

FIG.

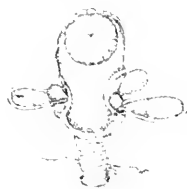
1. PEDICELLINA CERNUA, var. GLABRA, p. 565.
2. ———, elongated form.
3. ———, showing the tentacles folded in.
- 4-6. PEDICELLINA GRACILIS, p. 570.
- 7, 8. LOXOSOMA SINGULARE, p. 573.
- 9-11. LOXOSOMA CLAVIFORME, p. 575.
12. Fragment of the skin of *Hermione*, with individuals of the last species *in situ*, nat. size.

Fig. 1.



100 mic.

Fig. 2.



100 mic.

Fig. 9.



Fig. 10.



Fig. 6.



Fig. 7.



100 mic.

Fig. 8.



100 mic.

Fig. 4.

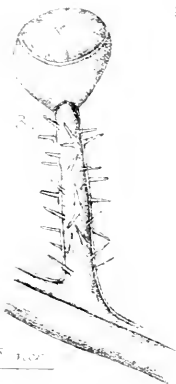


100 mic.

Fig. 12.



Fig. 3.



100 mic.

Fig. 5.



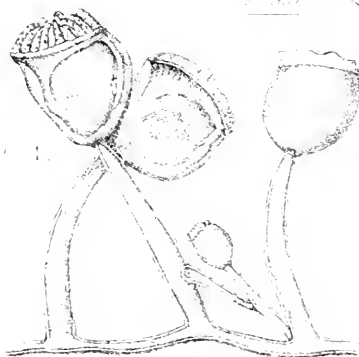
100 mic.

Fig. 11.



100 mic.

Fig. 13.



100 mic.

PLATE LXXXII.

FIG.

1. RHABDOPLEURA NORMANI, p. 580; nat. size.
2. ———, portion of the zoarium, with the contained polypides, very much enlarged.
3. The polypide of R. MIRABILIS, Sars, removed from its cell: *c*, the "buccal shield;" *d*, the cord by which the polypide is attached to the axial rod.
4. R. NORMANI, statoblast.
5. ———, polypide bud in a very early stage.
6. ———, ditto more advanced: *a*, one of the two fleshy plates between which the developing polypide is included.
7. ———, ditto in a still more advanced stage.

[All the above figures are after Allman, with the exception of fig. 3, which is copied from G. O. Sars.]

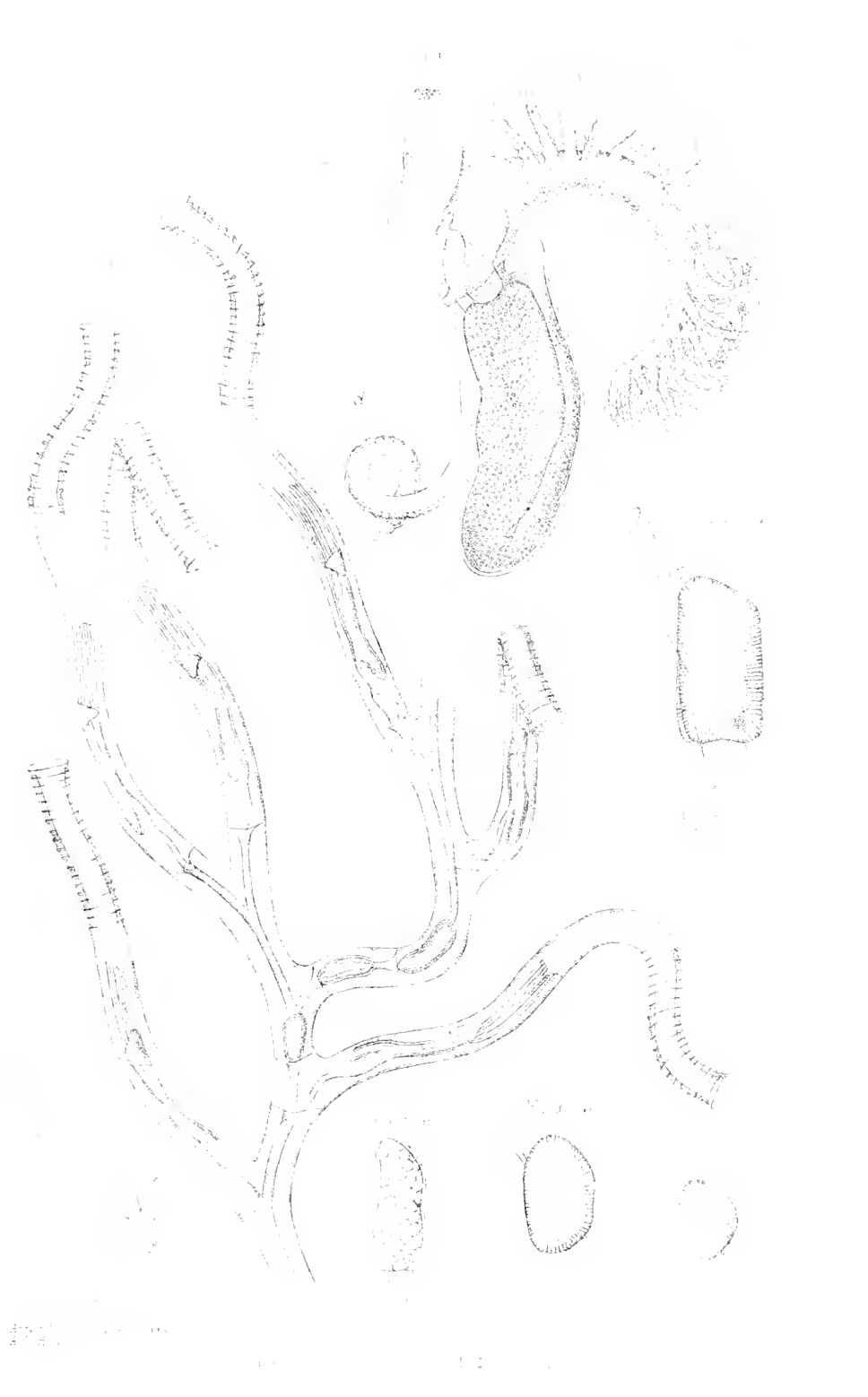


PLATE LXXXIII.*

Larval forms.

FIG.

1. LOXOSOMA SINGULARE; larva in the act of swimming.
2. TUBULIPORA FLABELLARIS (? FIMBRIA of the present work) ; general appearance of the free larva.
3. ALCYONIDIUM MYTILI ; free larva, front view.
4. MICROPORELLA CILIATA; free larva, viewed in profile.
5. CELLEPORA PUMICOSA ; free larva.
6. BUGULA FLABELLATA ; free larva.
7. EUCRATEA CHELATA ; free larva, viewed in profile.
8. VALKERIA UVA, form CUSCUTA; free larva, front view.
9. MEMBRANIPORA PILOSA ; larva (*Cyphonautes compressus*) immediately after liberation.
10. FLUSTRELLA HISPIDA ; free larva.

Lettering of the Figures.

S. Oral surface.	mass and the surface bearing the ciliary corona.
I. Aboral surface.	si. Furrow separating the sucker and the lower portion of the aboral surface.
C. Ciliary corona.	RM. Maximum point of the aboral mass.
ph. Pharynx.	RV. Border of the sucker.
œ. Esophagus.	r. Great retractors.
R. Rectum.	ra. Tactile organ (in <i>Loxosoma</i>).
est. Stomach.	mp. Pigment of pharynx (in <i>Alcyonidium</i>).
o. Mouth of the <i>gastrula</i> .	cc. Obscure portion of the body-cavity between the two branches of the stomach.
ms. Oral mesoderm.	œ. Lateral diverticulum of the foregoing.
mi. Aboral mesoderm.	coq. Shell (in <i>Cyphonautes</i>).
cc. Cavity of the body.	
CD. Digestive cavity.	
oe. Eye-speck.	
fl. Flagellum.	
pl. Ciliary plume.	
st. Sucker.	
V. Adhesive organ.	
sb. Furrow separating the aboral	

* The figures in this Plate are all copied, by the author's kind permission, from Dr. J. Barrois's admirable work on the Embryology of the Polyzoa, with the exception of fig. 6, which is after Nitsche.

Fig. 1.



Fig. 2.



Fig. 3.

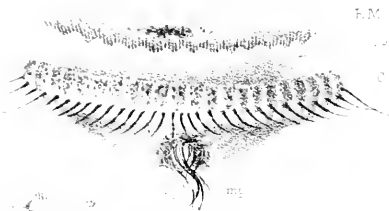


Fig. 6.



Fig. 5.



Fig. 10.



Fig. 8.



Fig. 7.

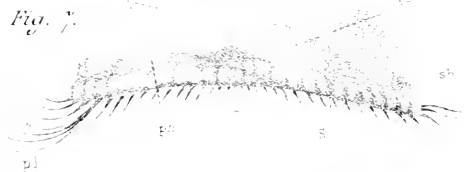


Fig. 9.

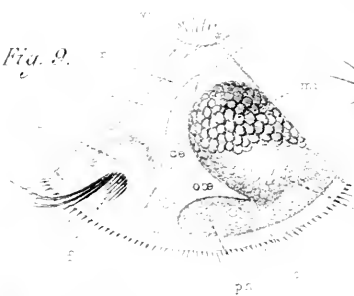


Fig. 4.





